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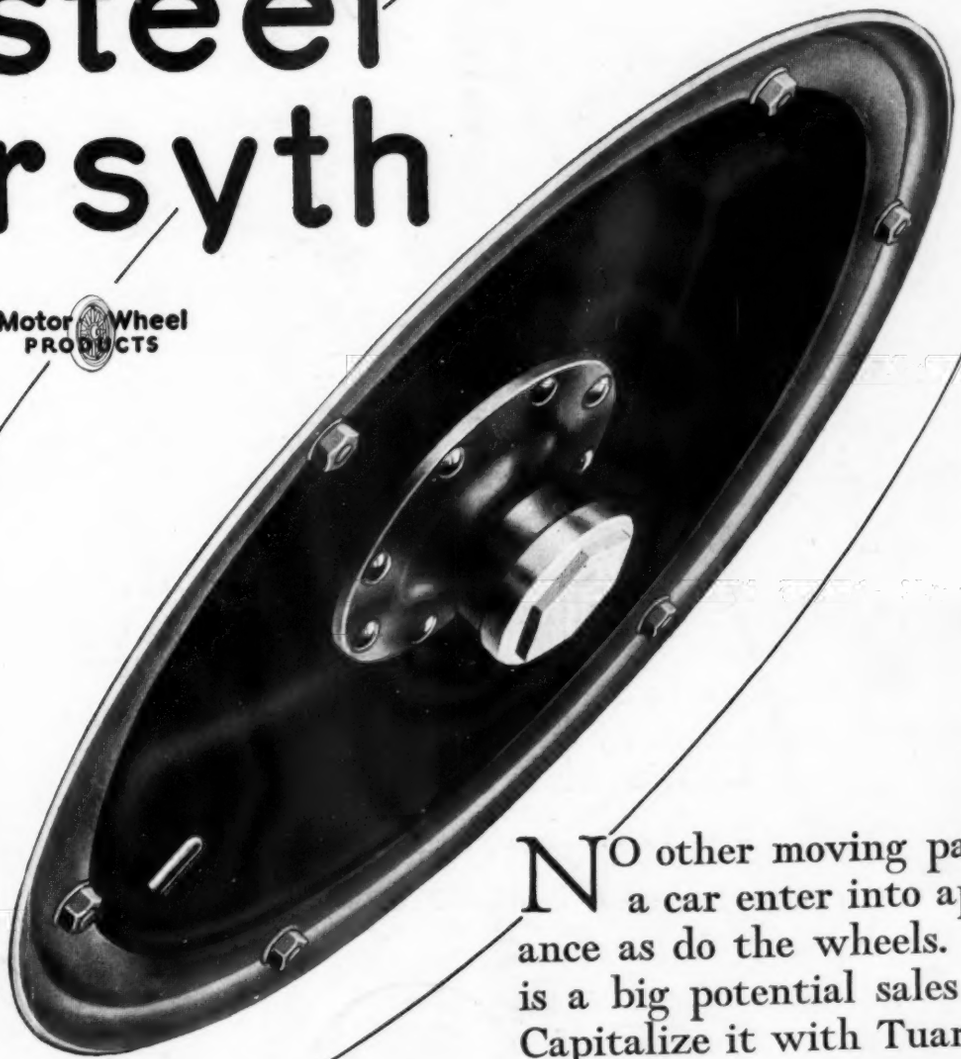

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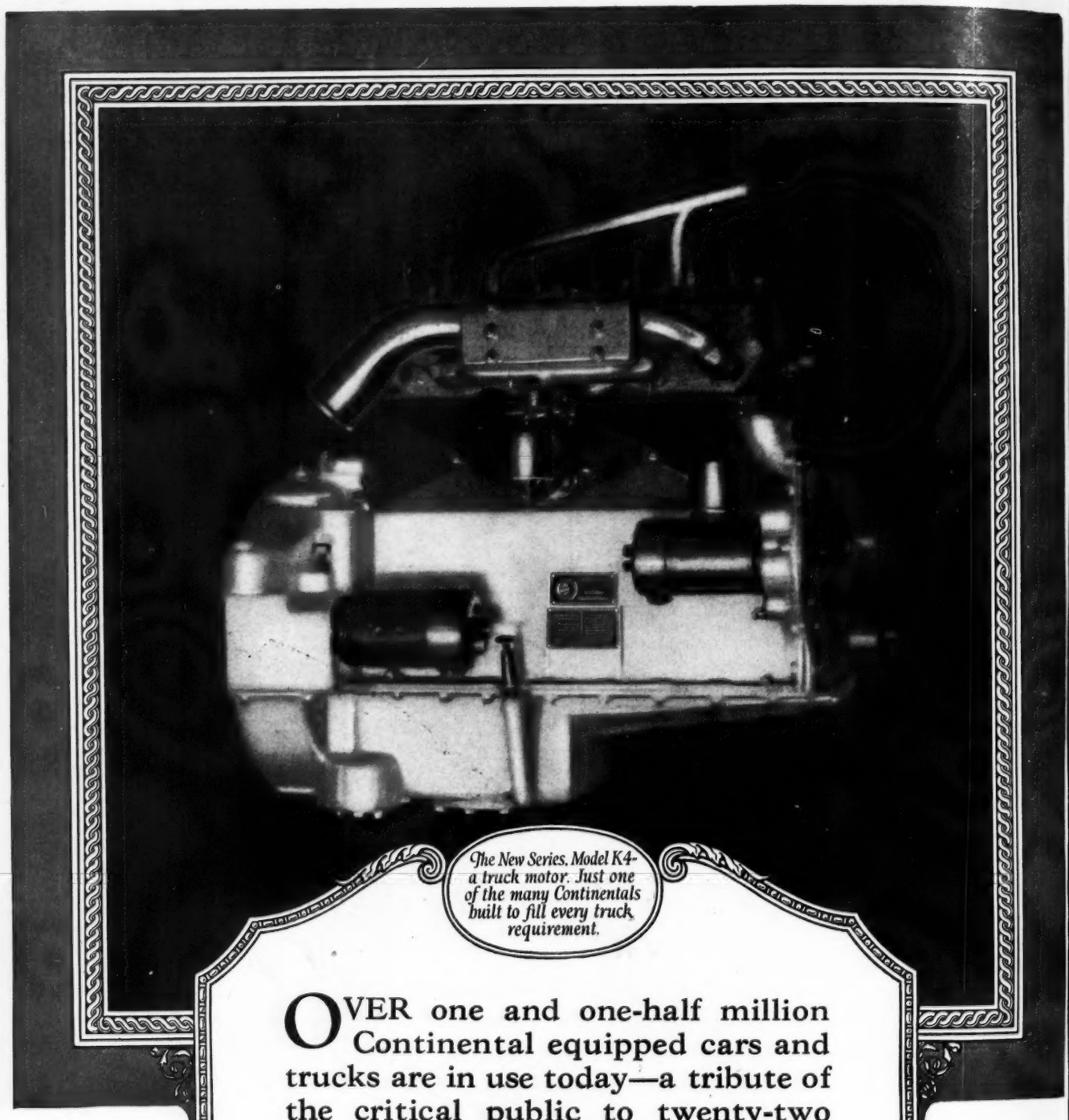

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AUTOMOTIVE INDUSTRIES
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VOL. XLIX NEW YORK—THURSDAY, NOVEMBER 8, 1923 No. 19

What Is the Matter with Business? NOTHING!

Lamentations of Crepe Hangers' Chorus Farcical Rather Than Tragic. Automotive Industry Needs No Pity. Nation Merely Completing Readjustment from War.

By James Dalton

A LOT of people are dodging around corners or ducking into doorways to escape business ghosts and goblins. When they're not doing that they stand around with bated breath waiting for something to happen. They don't know what it is they expect but they feel that something has just naturally got to happen.

The crepe hangers are out again with nice little black bows all ready to be tacked up. They are especially eager to drive nails into pretty coffins in which to lay away fragments of the automotive industry.

Bank statisticians are addling their brains trying to demonstrate that the purchase of motor cars, especially on time, is a menace to national peace and prosperity. We know of one who has demonstrated, to his own satisfaction at least, that clothing and furniture makers eventually will become practically extinct because so many people would rather have cars than fine raiment or luxurious house furnishings.

It undoubtedly is true that a great many persons gladly curtail expenditures for clothing in order to buy cars, but what of it? Is there any reason why it is sinful for them to spend their money on automotive products rather than clothing?

So far as furniture is concerned, if the makers and sellers of it would bring their prices down within reason they would be greeted with an amazing increase in business.

A big private banker boasted the other day that he never had advised a client to buy an automotive security and never would. He bewailed the reduced margin of profit on automotive products, pointed out that a few companies make most of the cars and trucks, and forecast a ghastly toll in the bitter battle for business, with price wars and sundry other evils.

These gloomy forebodings have penetrated even the automotive industry itself and a good many men who ought to know better are doubtful about the future. They, too, are expatiating on the concentration of production in the hands of a few companies.

AGAIN, what of it? The degree of concentration is no greater than it ever was and it is extremely unlikely that it ever will be any greater than it is today. There are fewer companies struggling for existence, but the general fabric of the industry is stronger than it ever has been. More than half those in the field have at least an even chance of success, which is something that never could be said before.

Wide circulation and considerable credence have been given to a report that 13 companies are doing 95 per cent of the business in the passenger car field.

This isn't true, either on the basis of units or dollars. The first 13 companies, including Ford, made 89 per cent of the units in the first half of this year, and on a dollar basis they had 76 per cent of the business. This left $300,000,000 for the rest of the field, which was a fairly respectable total.

In any compilation of automotive statistics it should not be forgotten that Ford output approximates more than 40 per cent of the grand total. He is not a member of the National Automobile Chamber of Commerce and he is distinctly in a class by him-

FREIGHT car loadings constitute the best barometer of business and the week of Oct. 20 was the eighteenth for the year in which they exceeded 1,000,000 cars. The exact figure was 1,072,881 as compared with 1,097,274 for the week of Sept. 29, which was the record for all time. There is every reason to believe that there will be several more million car-weeks before the year ends but even if they are lacking, the total is certain to demonstrate beyond all doubt that the absorption of commodities and finished goods in 1923 exceeded all previous high marks.

In the face of this showing what justification can there be for saying that business is not good?

self. He has no competition and the car he makes appeals largely to an income class which would have to be content with motorcycles were he not in the field.

Total production in the first six months of 1923 was 1,858,000, of which Ford had 800,000, leaving 1,058,000 for all other companies. The twelve which ranked next to Ford had 47 per cent of the grand total and 82.5 per cent of what was left after deducting the Ford output. The biggest producer next to Ford had 11.8 per cent of the grand total in the same period and only 25.5 per cent of the total after deducting the Ford output.

And that's that.

The automotive industry has its problems and there are some sick companies in it just as there are in every other business, but it is sounder fundamentally than some of the old line industries which bankers and others are so prone to coddle.

Production last month approximated 350,000, which wouldn't seem to indicate that there's anything especially wrong with the business. Not all those cars were sold, of course, for now is the time factory branches, distributors and dealers are stocking up for spring business, but unless manufacturers have gone absolutely crazy current sales were bigger than they ever were before in October.

It isn't likely, with the lesson of 1920 fresh in their minds, that producers are turning out automobiles just for the sake of seeing the wheels go 'round in their factories.

Industry Is Sound

The automotive industry is young and lusty. It is much stronger than some of its older brothers. It seems to be more or less anathema in the eyes of those who cling slavishly to tradition and the older order. They are the ones who most often make dire predictions about its future and who mourn because it has changed social conditions. They resent having money spent for motor cars instead of finery, fripperies and furniture, but their maledictions have no effect upon the desire for individual transportation or the buying inclinations of the public, and they are the angrier because they are impotent.

The automotive industry is sound as a dollar. Nothing serious is going to happen to it so long as its leaders keep their heads. Obviously, sales of motor vehicles are dependent in large measure upon general business conditions and there's nothing radically wrong with general business.

The distrust and lack of confidence which are in the air constitute a rather inexplicable phenomena. Business, as we frequently have said before, is good. Volume of production and sales is large in practically all lines. Business is not booming, fortunately. It was early last spring, however, and if it had not been checked we now would be in the midst of a period of inflation which would have left ruin in its wake.

What actually is happening is that the readjustment from a war to a peace basis has not been completed.

Many persons thought the painful process had been finished after the collapse of 1920 and the subsequent reaction which reached its peak in the early months of this year, but such was not the case.

Capacity of all American manufacturing and commercial enterprises was greatly increased during the year. Our plants attained in a very brief period a productive capacity which would not have been reached for a decade or more under normal conditions.

Except for a year or so after drastic deflation began in the middle of 1920, they have been kept busy supplying deficiencies resulting directly or indirectly from the war. Most of these deficiencies have been met and production from now on will be merely to meet current needs. That is why we believe the automotive business will be no larger next year than it has been this year.

Farm Situation Improving

Agricultural interests have been depressed to a greater degree than any other and they possess half the purchasing power of the country. They are showing evidences of improvement, however, and this improvement is likely to continue with a consequent increase in rural purchasing power. It is in these sections that not all the war's deficiencies have been met. Consequently sales energies can be concentrated on them with profit, especially in the South.

The farmer's outlook is undeniably brighter and the prospects for urban industry are by no means dark. The standard of living in this country is higher than it ever was before and what was a normal demand a decade ago is by no means normal now. We have not yet determined just what normal is and we probably will not for some time to come.

Our national wealth is increasing year by year, however, and if domestic demand has not already overtaken the productive capacity of American industry it soon will. It has been demonstrated that the country can be prosperous with a large part of the world's markets closed to us because of economic conditions, and there need be little fear that the country will be flooded suddenly with cheap European products.

England proposes to erect a tariff wall except for the products of her dominions and to seek markets for her own goods in those dominions. Notwithstanding the renaissance of hope for adjustment of the reparations problem, anything definite in the way of a solution is still in the future. This eliminates Germany. The whole financial structure of France has been built around reparations payments and she is getting nowhere in supplying herself with raw materials through occupation of the Ruhr. These are the principal manufacturing nations of the world next to the United States. When it comes to raw materials, the Fordney tariff will take care of them. Our own exports are steadily increasing notwithstanding the fact that central Europe is out of the market.

In a time of economic readjustment such as this, success does not come easily. Those who expect to succeed must be alive to current developments. They

must adjust themselves and their business to keep step with changing conditions of supply and demand. Their production schedules must be elastic and they must be able to take advantage of fluctuations in the prices of raw materials.

Above all, they must realize that business must be done for a long time to come on a gradually falling market. This is a condition which has not prevailed for years, but the foundations of the nation's wealth were built on the falling markets which followed the Civil War.

Most American business men pride themselves on being hard headed but as a matter of fact they are exceedingly temperamental. They effervesce self-confidence when everything is going well. Many of them apparently feel such a condition can exist only when prices and profits are steadily rising and production constantly expanding. When the bottom drops out they hang on with commendable courage and determination, but when the volume of operations is about the same, month in and month out, as it has been since early spring, they haven't known what to make of it.

Their fathers would have known, for they had grown accustomed to it and knew how to pile up fortunes on falling markets, but most of the old fellows have dropped out in the last hectic decade and their successors now are getting the seasoning they need to make them impervious to alarmist reports which have little foundation in fact.

Wall Street Influence Strong

National business sentiment is influenced, to a much greater degree than is reasonable by the operations of Wall street. Quoted values of stocks seldom are in line with their actual values. They usually are too high or too low and it is just as likely to be one as the other. Traders are influenced by every conceivable kind of report. They don't always attempt to find out whether or not these reports are true.

Stock values generally may have been too high when the slump began in the early months of this year but there has been no excuse for the steady and persistent pounding they have received ever since then. With quotations falling steadily some justification had to be found and that has been responsible for many of the pessimistic reports which have been disseminated.

It is undeniable, however, that business sentiment is influenced to a great degree by what is going on in Wall street. There seems to be a feeling that its judgments are infallible even when analysis of the facts proves them to be wrong. People forget that the wisest speculators don't always win and often bet on the wrong horse.

Happily, sentiment is veering towards optimism even in Wall street. Fundamental facts haven't changed but those who make the market have come to a belated realization that business is better and has been better than they have been willing to admit. Part of this change was based upon reports of business for October, continued enormous freight car loadings and other economic factors. It must be confessed, nevertheless, that it was influenced to a greater degree by the right about face of a sensational speculator who was a bear, then withdrew from the market and now has come back as a bull. His followers are legion.

It matters little, however, what has been responsible for renewed confidence in "the street." It will have a tremendous psychological effect upon the entire nation and will do more than anything else to restore an atmosphere of confidence upon which good business is based. There is an unlimited supply of money in the country and the will to buy is all that is necessary to insure large scale demand for goods of all kinds.

THE bears who have been ravaging Wall Street for months are being put to flight by the bulls. Stock prices are veering upward. The sun is breaking through the clouds and the men who spend their waking hours in the canyons of New York's financial district are seeing the light. The volume of business in October was a revelation to them. Trade is better than they thought it was and promises to be even better in the remaining months of the year. Clear visioned leaders of industry can find nothing to worry about. Confidence is dispelling distrust because:

There's NOTHING wrong with business.

The United States is prosperous. In the eyes of all other nations it is inconceivably prosperous. If this prosperity is shaken or shattered for a considerable time to come it will be largely our own fault. Peaks and depressions in business follow economic laws but they are not inevitable. There never is any absolute necessity for producing inflation and, lacking inflation, there is nothing to deflate. It is deflation which brings panic and failure.

So far as the automotive industry is concerned, it has ample plant capacity for the present. Expansions, except in isolated cases, will be foolhardy. There must be readjustment to current conditions. The number of companies in the vehicle field has steadily contracted but a major percentage of those which remain can endure.

The parts branch of the industry must go through the same general process. Its present productive capacity is greater than the demand for major lines. This means simply that factories must find some supplemental line to take up the slack.

Replacement Market Large

Manufacturers of major units in the parts field have not yet grasped the immensity of the replacement market. They need not confine themselves to original equipment if this market will not absorb all their output. They need not confine themselves to one line. There is no reason, for example, why a company making engines for which there is a limited replacement market should not use its surplus factory space for the manufacture of some line of accessories or equipment which can be sold directly to the millions of American motor vehicle users.

The process of elimination and survival is going on in the parts field just as it is in the vehicle field. The problems it involves can be solved successfully by the application of intelligence, individuality and aggressiveness.

All the problems of the automotive industry can be met by common-sense, intelligent progressiveness. Sane and diligent application to business will bring greater permanent rewards under the conditions which now prevail than did more happy-go-lucky methods in the boom immediately following the war. And it should not be forgotten that the volume of business is greater today than in those riotous days.

Production last month was only 30,000 under the peak for the year and it was the greatest October in the industry's history. Reports from all sections of the country indicate that retail sales are holding up surprisingly well and up to this time there has been relatively little stocking of cars either in factory branches or by distributors.

Assuredly, nothing is the matter with business.

Front-Wheel Brakes Are Chief Feature of British Show

Price reductions are made on nearly all English cars. Marked improvement noted in closed bodies. Number of models still increases.

By M. W. Bourdon

London, Nov. 3 (by cable).

THE large number of cars showing four-wheel brakes for the first time is the outstanding engineering feature of the seventeenth annual British automobile show which opened yesterday at Olympia. Front-wheel brakes are standard or optional equipment on 27 models, made by 20 different British companies. Last year only two British cars were so equipped.

Other notable features of the show include: 1. Price reductions on most British cars ranging between 12 and 30 per cent. 2. Cessation of tendency toward reduction in engine dimensions excepting among those makers who previously concentrated on high powered models. 3. Large number of 100 to 120 cu. in. four-cylinder cars selling under £400 and 70 to 80 cu. in. four-passenger models selling under £250. 4. Improvements in body work, particularly in all-weather jobs and sedans.

Four-wheel brakes are the subject of unlimited discussion at the show. Practically all French makers show at least one model thus equipped. Pronounced diversity of opinion exists, however, among British manufacturers. Many maintain that front-wheel brakes are undesirable and even that they are dangerous when the average driver is responsible for their upkeep.

It is felt in some quarters that a few of the smaller makers, considering front-wheel brakes a good sales feature, have rushed them into production almost untried, and that they are being offered in some cases without sufficient consideration of the additional stresses which they set up in axle, springs and frame.

Body work exhibited indicates that considerable attention has been given to closed and all-weather models during the last twelve months. Eight British makers and also several custom body builders are using the Weymann sedan construction, the low weight of which makes it feasible to put sedan bodies on 70 to 100 cu. in. light cars. Leatherette panels are used for the external finish of some of these jobs and is not as attractive as it might be. Some of the contours, moreover, are not especially pleasing.

Olympia Extension Used

The Olympia extension, comprising a new hall approximately half the size of the main hall, is being used for the first time for a passenger car show. The White City buildings, a mile away, are not required for overflow exhibits, as has been necessary in each of the last three years. Even with its enlarged facilities, however, Olympia still lacks capacity enough to house all of the firms desiring to exhibit.

Attendance on Friday was 15,129, making the largest opening day attendance since 1919. Last year only 12,181 persons viewed the exhibits at the first session. There is every indication that larger crowds are to be expected during later days of the show.

It is impossible to estimate accurately sales prospects at this early time, yet a majority of English manufacturers are quite optimistic, because of the large number of dealer contracts placed before the show. Their chief fear concerns the unusual amount of price cutting which is taking place simultaneously with an upward trend in material costs.

Study of the new designs indicates that most British makers are considering production costs more closely than ever before. One four-cylinder, 12 hp. car introduced last year, for instance, has been redesigned in such a way as to preserve the same finish, improve performance and add equipment and, at the same time, permit a price reduction of 31 per cent.

Exhibitors from All Nations

The show is thoroughly international in character, Germany and Austria being the only automobile manufacturing countries not represented. These nations are still excluded.

This year 145 different makes are exhibited as against 159 last year. The cars on view comprise 79 British makes, 29 French, 20 American, 12 Italian, 3 Belgian, 1 Dutch and 1 Swiss. Including accessory exhibits, there are 526 stands at the show as against 555 last year. Five hundred and ninety-two cars are exhibited on 192 stands, including 52 coachbuilders, exhibits. Stripped chassis to the number of 114 are shown of which 8 are American. Last year 639 cars and 109 stripped chassis were exhibited.

American cars represented this year are Buick, Chandler, Chevrolet, Cleveland, Durant, Dodge, Essex, Flint, Gray, Hudson, Hupmobile, Jewett, King, Moon, Oakland, Overland, Packard, Paige, Studebaker and Willys-Knight.

More than 60 new models of all nationalities are shown, including 33 British. These latter comprise 16 four-cylinder cars of under 120 cu. in. displacement and only one with a displacement of over 200 cu. in. New six-cylinder British models consist of one under 100 cu. in. displacement, five with piston displacement between 100 and 150 cu. in., one between 150 and 200 cu. in. and three over 200 cu. in. Many of these new models are not in production yet, and some of the small sixes probably never will be, because demand for this type of car is decidedly limited.

Price reductions on British cars are appreciably greater than those on imported models. As a matter of fact, increases are recorded in the case of certain individual French and American cars, although the average shows both of these to have dropped about three per cent as com-

pared with last year. Price cuts on some of the Napier and Lanchester are as follows:

	Old Price	New Price
Napier	£1750	£1500
Lanchester	1850	1800

Rolls-Royce has not made any price changes, its 40 hp. models still selling for £1850 and the 20 hp. job for £1100.

Rolls-Royce has announced its decision to add front-wheel brakes in 1924, but since the particular type to be used has not yet been decided upon, designs are not exhibited.

Price Cuts Large

The largest price cuts are on small four-cylinder cars with a piston displacement of about 120 cu. in. Reductions on cars of this type average about 21 per cent.

The greatest increase in demand is for four-cylinder cars with piston displacement between 100 and 120 cu. in. selling between £300 and £400. Reasons for this trend in demand lies in the fact that models of this kind are providing ample room for four passengers combined with lower prices, while fuel and tire costs also have dropped.

The popularity of smaller models, both two and four-passenger, 45 to 100 cu. in. piston displacement, is being maintained to a considerable degree, however, by the requirements of a large proportion of first-time buyers.

Many British makers are still increasing the number of chassis models and body types. Daimler, Lanchester, Rover, and Sunbeam have added new sixes, all of which are equipped with front-wheel brakes. Daimler now produces ten distinct chassis models, some of which have certain optional features which bring the total of complete car models up to 83. Wolseley models exceed 30.

Sunbeam has increased its line to five chassis, three of which are new. It has dropped a 184 cu. in. four-cylinder model, while adding a 119 cu. in. four, and two sixes with piston displacement of 153 cu. in. and 193 cu. in. All of these new Sunbeam models have front-wheel brakes with the exception of the new four. Other characteristics include overhead valve pushrods, aluminum pistons and magneto starting equipment.

Fifty per cent of the British cars have spring gaiters as standard equipment and 25 per cent of these have rebound dampers. The number of accessories included as standard equipment has been increased considerably. Rear screens are included frequently.

Sedans are increasing in popularity but are not likely to exceed ten per cent of 1924 production. One standard maker, however, has a separate plant which is specializing in sedan body work.

A clear picture of various design trends can be obtained from the following percentage tables based upon cars of all nationalities exhibited at the shows this year and last year:

NUMBER OF CYLINDERS

	1922	1923
Four	75%	75%
Six	19	23
Eight	5	2

VALVE LOCATION

Side	57	48
Overhead	34	44
Sleeve	9	8

(Pushrods now are used with 82 per cent of the overhead valve engines as against 70 per cent last year.)

LUBRICATION

Pressure	49	54
Splash-pressure	31	35
Splash	20	11

CLUTCH TYPE

Cone	44	36
Single Plate	34	42
Multiple disk, dry	14	15
Multiple disk in oil	7	7

FINAL DRIVE TYPE

	1922	1923
Spiral level	83	85
Straight bevel	6	4
Worm	11	11

Aluminum pistons are to be found on 53 per cent of the models exhibited as against 48 per cent last year.

BRAKE LOCATION

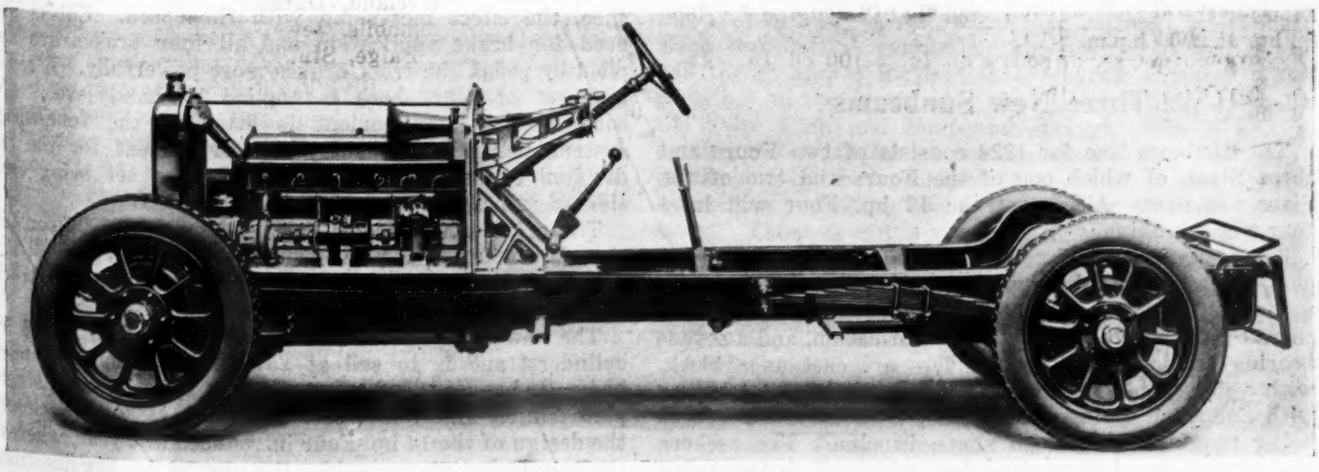
	1922	1923
Four-wheel brakes	14	28
Front and transmission brakes.	2	3
Front, rear and transmission...	4	8
All on rear wheels	60	49
Transmission and rear	20	12

SPRING TYPES

Cantilevers	20	20
Half-elliptics	55	60
Quarter elliptic	20	17

Analyzing the specifications of the British cars alone it is found that the percentage of sixes and fours is the same as for cars of all nationalities shown. This, however, is an increase in the percentage of the British sixes over last year, and practically all of the new British sixes are block cast. There is also one straight eight.

Unit power plants in British cars have increased from 19 to 26 per cent, overhead camshaft models from 14 to 16 per cent. Distribution gearing employing helical gears increased from 28 to 35 per cent.



Chassis of new 20-hp. Sunbeam

Beverley-Barnes

The Leyland straight-eight not having materialized at the present show, a new car made by a London firm has the distinction of being the only British representative of the straight-eight principle. It is known as the Beverley-Barnes. The makers have hitherto specialized in machining work for other car manufacturers, but apart from that are newcomers to the industry. The engine has 2 15/16 x 4 7/16 in. cylinders; it has an overhead camshaft driven by helical gears and a vertical shaft, but, instead of the camshaft being located immediately above the cylinder head, it is placed to one side in a trough and operates the valves through rockers over it and over the valves. The idea of this arrangement is primarily to provide copious lubrication for the cams and gearing without running risk of an excessive amount of oil passing down the valve guides. The overall cover has an internal web which separates the camshaft from the valves, and the oil in the trough can therefore be kept at such a level as to result in the cams being almost submerged. Lubricant is fed to the trough on the bird-fountain principle from a separate compartment, while overflow returns to the sump through a passage formed in the head and cylinder castings. The result of this construction is that all the studs and nuts holding the head to the cylinder block are outside the top cover. When decarbonizing it is therefore possible to remove the head complete with valves and camshaft without removing the cover, the drive shaft having a dog clutch or tongue joint at its center to allow the top gears to remain undisturbed.

The cylinders are block cast, with separate manifolds, the latter consisting of two units combining inlet and exhaust passages for four cylinders in each case. The two carbureters have air inlet pipes leading to a muff surrounding the dual exhaust pipes. Water circulation is by pump at the rear of the timing case, with the generator and magneto in line behind it, and connected by flexible disk joints. The crankshaft is machined from the solid billet with circular webs and there is a bearing on each side of each crank throw. Aluminum pistons are used and H-section connecting rods machined all over. Lubrication is on the trough and pressure system.

The engine and gearset are mounted as a unit, the latter providing three speeds with central control, while the clutch is of the multi-dry plate pattern. Four-wheel braking is fitted. The front brake camshafts are supported by the axle and are pedal-operated in conjunction with the rear set, the latter also being operated alternatively by the hand lever. As compared with the eight-cylinder Leyland and other British productions of similar size, this new car is to be sold at a moderate figure, viz., £750 for the chassis. It is stated that the engine develops 82 hp. at 2700 h.p.m.

Three New Sunbeams

The Sunbeam line for 1924 consists of two Fours and three Sixes, of which one of the Fours and two of the Sixes are new. All except the 12 hp. Four will have four-wheel braking.

The six-cylinder 2.95 x 4.73 in. engine of the new 20 hp. chassis has overhead valves operated by pushrods, magneto ignition, pump water circulation without fan, thermostatic control, hollow shaft lubrication, and a seven-bearing crankshaft. The cylinders are cast as a block, with a detachable head in which the tulip pattern valves with compound springs are in line, the combustion spaces being roughly of diamond shape in plan. The rockers are carried on a hollow shaft into which oil is fed under pressure; to carry away surplus oil freely, and prevent "weeping" at the joint of the cover, the top of the head is inclined down toward the push-rod opening in the casting. There is only one water passage between the head and cylinder block, at the rear end. The water delivered by the pump enters the block at the front, passes over the barrels, emerges at the rear through a conduit leading up to the head and thence flows over the combustion chambers and valve seats to the outlet pipe at the front.

Chain drive is used for the distribution, the water pump, generator and magneto being mounted in line and driven through a flexible vernier coupling. Only the carbureter is mounted on the right of the block, the starting motor being piloted into the rear of the flywheel casing on the left. A series of baffles is cast in the sump to obviate surging of the oil, temporary "starvation" of the pump and the occurrence of air locks in the oil system when the four-wheel braking is forcibly used.

Engine and gearset form a unit, with a completely inclosed single dry-plate clutch. The driven plate of the latter has radial slots dividing it into a series of segments. Fabric rings are riveted to each side, but alternate segments are slightly bent so as to cause the fabric to "stand proud" of those alongside, the fabric at the front being riveted to one set of segments and that at the back to the alternate segments. Thus under the initial pressure of the back plate and springs a more progressive take-up of the drive is afforded.

Four-Speed Gearset

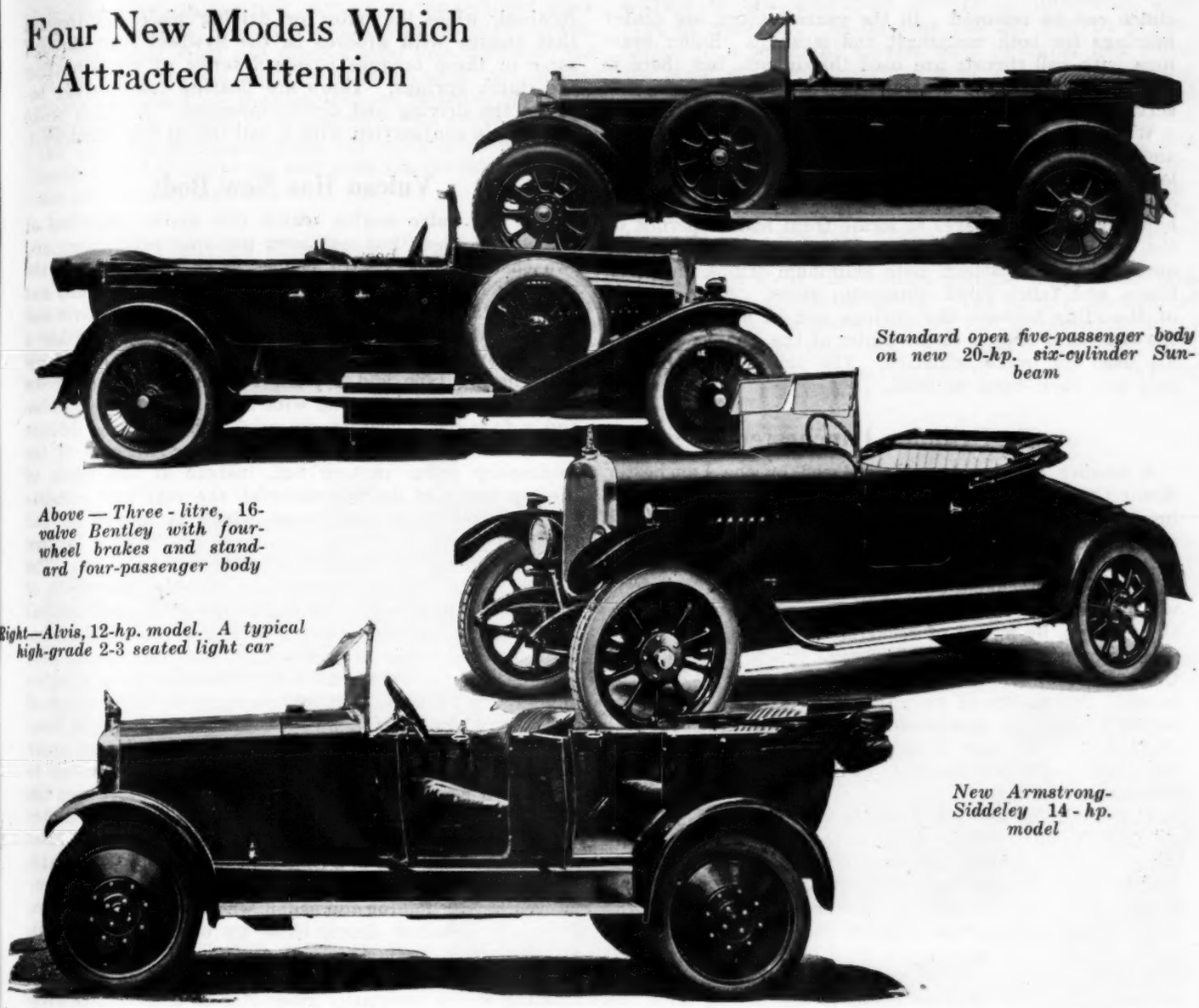
The four-speed gearset with right-hand control has ball bearings throughout, even for the pilot; two races support the rear end of the main shaft and have the skew gear for the speedometer drive between them. The ultimate ratios are: fourth (direct), 4.5; third, 6.5; second. 9.9, and first 18, the latter being an unusually low bottom gear ratio for a car of this power and weight (chassis 5850 lb.). Behind the gearset the drive is taken to a pressed steel banjo type rear axle, the propeller shaft being inclosed by a torque tube in which a "steady" bearing is provided for the shaft approximately midway of its length. Final drive is by spiral bevels and rear suspension by underslung cantilever springs. A notable feature of the half-elliptic front springs is that they are practically straight under load and are considerably eccentrated, the front end being little more than one-third the total length.

The front brakes are on the Perrot-Farman system with automatic servo action; the fabric-faced aluminum shoes of each brake are of unequal length; they are hinged to each other and anchored at the top ends; cam actuation applies the smaller (front) shoe, which develops a graduated torque that in turn applies the other and larger shoe, the effect increasing with the speed. Cables are used for brake application and all four brakes are applied by pedal, the front brakes more powerfully. A separate set of rear shoes is applied by hand lever. No compensating arrangement is fitted to the four-wheel system, nor independent service adjustment for the individual brakes, one adjustment for the set being considered sufficient.

The price of this model has been fixed at £795 for the chassis, £950 for the five-passenger phaeton and £1,175 for the saloon. It has a wheelbase of 137 in., 57 in. track and 820 x 120 mm. tires on spoked steel wheels.

The new 12 hp. four-cylinder model has 2.68 x 4.33 in. cylinders, and is to sell at £570 with a four-passenger body. It has overhead valves, a three-speed gearset, single plate clutch and rear-wheel braking. It follows closely the design of the 14 hp. Four introduced last year, whereas the new 16 hp. Six resembles the new 20 hp. Six described above, except that it has a three-speed gearset, 2.76 x

Four New Models Which Attracted Attention



Standard open five-passenger body on new 20-hp. six-cylinder Sunbeam

Above — Three-litre, 16-valve Bentley with four-wheel brakes and standard four-passenger body

Right—Alvis, 12-hp. model. A typical high-grade 2-3 seated light car

New Armstrong-Siddeley 14-hp. model

4.33 in. cylinders, a 129 in. wheelbase and 55 in. track. This model sells at £850 with five-passenger open body. Examples of all except the smaller Four are shown at Olympia, the 24-70 hp. Six, with an all-inclosed limousine body at £1,625, with four-wheel brakes and 144 in. wheelbase.

Maudslay

One of the pioneers of the British motor industry, the Maudslay Motor Co., Coventry, discontinued making passenger cars at the outbreak of war and has since concentrated on trucks. But they now have introduced a six-cylinder chassis designed apparently without regard to cost. It has a 122 cu. in. engine with 2.55 by 3.94 in. cylinders and two overhead camshafts that are driven from the rear end of the crankshaft by roller bearing eccentrics yoked by a Y-shaped link, a scheme which eliminates a dead-center. Another costly feature is the use of a built-up crankshaft running in seven roller bearings. Roller bearings are also used on the crank pins, all rollers working on the big-ends, the inner races in every case being formed by case-hardened shaft units. The latter are united by tapered crank pins that fit into the crank cheeks, where they are retained by a round-headed drawbolt. The connecting rods are bolted to separate heads, forming the races for the roller bearings.

Another unorthodox feature is in the design and location of the water pump. Within the front end of the unit cylinder block and crankcase is a water passage leading from the cylinder jackets to a cylindrical casing concentric with the crankshaft, the latter here carrying the pump rotor; a set of stator blades are formed inside the casing.

The spherical combustion chambers in the detachable head are machined; the spark plug being midway between the tulip-shaped valves, which are inclined at 45 deg. Each camshaft is carried by six roller bearings, has a ball thrust and is inclosed in a separate chamber. The cams act on the crown of a steel piston within which lie the valve stem and compound springs. The eccentrics driving the camshafts are counterbalanced and the "strap" of the one on the crankshaft has a boss to link up the connecting rod of an oscillating plunger oil pump in the sump. There is not a single plain bearing doing heavy duty in the engine. The oil pump delivers through steel tubes in the crankcase casting, from which the oil is sprayed onto the bearings and is also carried up to the camshafts.

Another point of note is the use of a flywheel generator and starter, specially designed for this engine by one of the British electrical equipment firms. It is detachable without dismantling the engine. Engine and four-speed gearset are bolted together as a unit, with an open flywheel pit between, from which the single dry plate

clutch can be removed. In the gearset there are center bearings for both mainshaft and layshaft. Roller bearings with ball thrusts are used throughout, but there is no pilot bearing, the central ball race of the mainshaft serving instead.

With the exception of two, the spring ends are straight and free to slide in slotted rollers housed in brackets, with leather spring gaiters continued over flanges on the open ends of the brackets. The front ends of the front springs, however, have solid eyes to locate them and to permit of the use of front brakes. The latter are of the Perrot automatic servo pattern, with aluminum drums, cast iron liners and fabric-faced aluminum shoes. A front axle of H-section between the springs and of oval section to the swivels, is clipped to the center of the springs. Cables are used for brake actuation. The price of the chassis only has been fixed at £825.

Six-Cylinder Lanchester

A smaller Six has been introduced by the Lanchester Motor Co. which differs in many respects from the 40-50 hp. type. It has 2 15/16 x 4½ in. cylinders, giving it a displacement of 182 cu. in. The cylinders are cast as a block with water spaces between adjacent barrels; the head is detachable and carries an overhead camshaft which operates the two rows of valves, inclined at a slight angle, by means of rockers.

A point of diversion from normal practice is the location of the distribution gearing at the rear end of the engine. It consists of worm gearing, the same as in the larger model. A downward extension of the vertical shaft drives the gear type oil pump which has smaller but wider teeth than usual, in order, it is said, to reduce the surface leakage.

The crankpins are bored out to reduce weight and the crankshaft runs in eight white-metal bearings, the eighth being located behind the distribution gearing. White metal is cast directly into the connecting rod heads and caps; the aluminum pistons, which are cast in metal molds, have three narrow rings in the head and a scraper in the skirt. The piston pin is fixed in the connecting rod.

Engine lubrication is on the hollow crankshaft system. A special feature is to be noted in connection with the overhead valve gear lubrication. Each rocker is fulcrumed at the end opposite the point of contact with the valve, and in the center is a deep rectangular cup in which the roller below its cam is almost hidden, its spindle passing through the sides of the cup; the latter is kept continuously filled with oil by the "mist" within the aluminum cover and so insures the roller face constantly bearing a heavy film of oil as it makes contact with its cam, thus eliminating the need for an independent drip feed to each cam.

Valve clearance adjustment is effected by means of an eccentric bush on the fulcrum pin of each rocker. Another feature of note is the provision of a multi-lobed "balancing" cam, located between the valve operating cams of the fifth and sixth cylinders, against the underside of which bears a spring loaded plunger, the idea being to prevent "snatching" in the camshaft drive. The water outlet from the cylinder head contains a thermostatic valve. There are two separate exhaust manifolds leading into two centrally placed downtake pipes; the latter converge in a first expansion chamber, from which a single pipe leads to a second expansion chamber.

The flywheel and clutch are inclosed within a bell-housing cast in a unit with the gear casing. The clutch is of the single dry-plate type, but has unusual features. The driven plate, which has a claw type sliding joint secured to it, is located within a recess formed in the flywheel, while the outer or driving plate has tongues that engage with grooves in the flywheel rim; through some of these tongues passes a series of studs bearing the clutch springs. There are floating fabric rings between the driving and driven members. A clutch brake is fitted in conjunction with a ball thrust for withdrawal.

Vulcan Has New Body

The cuff valve engine which this maker exhibited at last year's Show has not been put into production, and two chassis models with poppet valve engines form the program for 1924. These are a 12 hp. (2¾ x 4¾ in.) and a 20 hp. (3¾ x 5⅛ in.), the first with overhead valves and the second with side valves. The smaller engine has a two-bearing crankshaft with a front ball bearing of the self-aligning type and a plain bearing at the rear. An aluminum rear axle casing with steel reinforcement tubes and a four-speed gearset are used, otherwise the designs are conventional. The standardized bodywork is of the folding-top sedan pattern but, instead of the whole of the top being of flexible material, the rear part consists of a quarter-circle metal cowl which is hinged on ball bearings at its front bottom corners and can be lowered back out of sight behind and below the rear seat. The flexible front portion, comprising roughly two-thirds of the whole, is attached to the front edge of the cowl and has a lazy-tongs framing, spring-loaded to assist erection. Only one wide door is provided on each side, containing, like the side paneling behind it, adjustable glass windows having side channels that fold down on to the top edge of the body when the windows are lowered. There is, however, no top channel nor fixed abutment for the upper edge of the glasses; these having molding secured to them with press-buttons to keep them in contact with the fabric of the top when side winds tend to cause draughts to enter along this line. This body, therefore, apart from its peculiar rear end, is a combination of the phaeton with framed side curtains that open with the doors and true all-weather or folding-top sedan wherein the side glasses, lifted from hollow doors, close up to molded cant-rails attached to a leather-covered top.

The advantage of the rear cowl is that it eliminates framing which ordinarily gives rise to considerable overhang of the folded top; it is obviously not a cheap construction, though the price (£495) of the complete 12 hp. car does not bear evidence of this. With the standard phaeton body and folding-top the price is £345, which, it will be seen, is £150 less than the price of the special type described. In addition to the difference in the top, the whole of the body and its equipment are of better finish. A feature of note in the standard phaeton body is that the front windshield has a return lip on the side pillars and the front edges of the framed side curtains fit into the recess so formed, giving a far better protection against draughts than the usual turn-button fixing.

Arrol-Johnston

The Scottish Arrol-Johnston company, which is a subsidiary of the Beardmore engineering and shipbuilding interests, has dropped the 3.15 x 5.12 in. Four, which has been its sole product and has introduced two new Fours, with 2.95 x 5.12 and 3.5 x 5.12 in. cylinders.

The two models are similar in having detachable L-head engines, aluminum pistons, steel and cast-iron timing gears, three bearing crankshafts, pump water circulation, hollow shaft lubrication, inlet manifolds integral with the cylinder block, magneto ignition, four-speed gearsets with right-hand control, spiral bevel drive, half-elliptic springs, and all brakes in rear wheel drums. Points of

divergence are in the unit casting of the cylinder block and crankcase, a cone clutch, unit engine construction, open propeller shaft and pressed steel axle casing in the 14 hp., as against a separate cylinder block, dry single-plate clutch, separate gearset, inclosed propeller shaft and malleable axle casing in the 20 hp. The prices are low; the four five-passenger open car with all-weather top being £398 for the 14 hp. and £498 for the 20 hp. model; the 20 hp. sedan is £650.

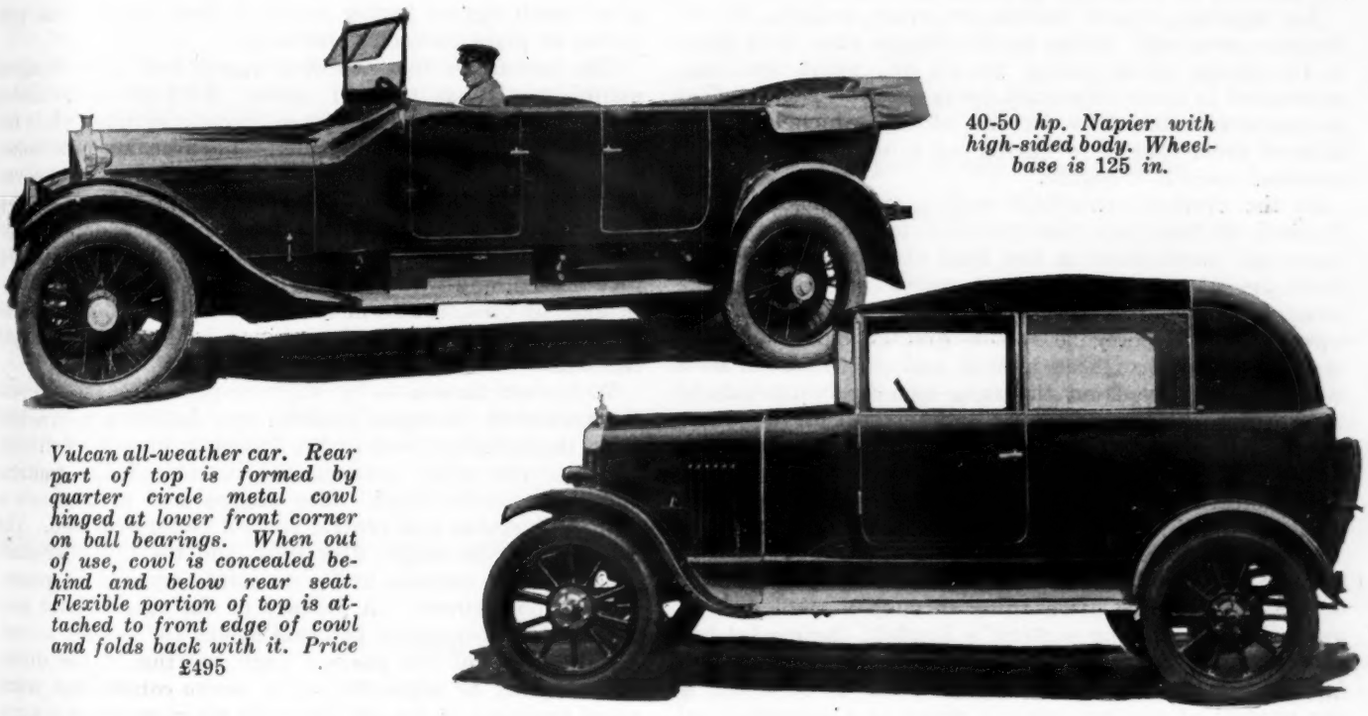
Selective Gearset Displaces Planetary Type

A distinct departure from previous Lanchester practice is the adoption of a four-speed selective gearset in place of the three-speed planetary set hitherto used. It has right-hand control and most of the bearings are ball bearings. Center bearings are provided for both main and layshafts, and the reverse gears are out of mesh except when in actual use.

Four-wheel braking is standard, in conjunction with disc wheels, advantage being taken of the latter to locate the hub bearings and brake drums in the center plane of the wheel. Ribbed aluminum drums with cast-iron liners are used; the shoes are also of aluminum and faced with fabric. The front axle is a tubular construction with forgings for the underhung semi-elliptic spring pads and the forked ends. The front brake camshaft is below the axle, carried in bearings integral with the latter, and is operated by pull-rods running back from ends of a cross rod slightly below and in front of the radiator. Within the drum the camshaft terminates in an eye through which passes, in the steering swivel axis, a small vertical bolt that serves to hold two flat plates of hardened steel, the front and back edges of which form the shoe expanding cam. These plates can swivel with the wheel, while the operating shaft remains parallel to the axle, and the arrangement, it is claimed, eliminates any possibility of road wheel or spring deflection having effect upon brake action.

The front cross-shaft is operated by a pull-rod running back on the right of the engine, with a rather conspicuous wing nut adjustment at the front end. This pull-rod is coupled to the cross-shaft through a differential gear type of equalizer. At its rear end the pull-rod is connected to a bell-crank carried on a swinging link below the pedal shaft, the second arm of the bell-crank being linked to the pedal, while a third is connected to another cross-shaft with a differential gear from which rods run back to the rear brake camshafts. The swinging link referred to has its movement restricted by a spring-controlled dashpot, and it serves to centralize the linkage during adjustments, rather than to balance the braking effect on front and rear wheels. The hand lever actuates the rear brakes independently.

Fuel feed is by the vacuum system, the vacuum tank being a cast aluminum fitting. The mixing chamber of the carbureter is water-jacketed and is connected to an aluminum intake manifold. The engine hood runs back from the radiator to the rear end of the cowl, so making accessible the wiring in front of the cast aluminum instrument board. All wiring is carried in aluminum channels with cover plates.



40-50 hp. Napier with high-sided body. Wheelbase is 125 in.

Vulcan all-weather car. Rear part of top is formed by quarter circle metal cowl hinged at lower front corner on ball bearings. When out of use, cowl is concealed behind and below rear seat. Flexible portion of top is attached to front edge of cowl and folds back with it. Price £495

With a five-seated phaeton body the price is £1250; the chassis only sells at £950. Some leading particulars are as follows: Wheelbase 129 in.; track 54 in.; tires 880 x 120 mm. beaded edge; chassis weight, 2570 lb.; gear ratios; fourth, direct, 4.375; third, 7.5; second, 10.5; first, 17.5.

Bean

Supplementing the 12 hp. model which has had an extensive sale during the past two years, a new 14 hp. Bean has made its appearance. This is a four-cylinder model with 2.95 x 5.32 in. detachable L-head cylinders cast as a unit with the top half of the crankcase. Lubrication is through a hollow crankshaft. The latter has three bearings and is counterweighted, driving through a silent chain, the camshaft and accessories, including a three-bladed cast aluminum fan. Water circulation is by pump driven off the front extension of the camshaft. An option is given on magneto and battery ignition, and both can be fitted at an extra charge. The magneto and generator are driven by the same chain that serves for the fan, this chain being adjusted by varying the position of the

magneto bracket, which is flange-mounted on the back of the timing case. The unit power plant comprises a multiplate dry clutch and a four-speed gearset with right-hand control, giving ultimate ratios of 4.5, 7.25, 10.4 and 18.8. An open propeller shaft with metallic joints and spiral bevel gears represent the final transmission, the drive and torque being taken by the springs. All of the brakes act on rear wheel drums, but four-wheel brakes are offered at an extra charge of £25. A fabric disk is inserted between the steering worm-shaft and the steering column just above the gear housing, the advantages claimed for this construction being that it insulates the steering wheel against vibration and facilitates construction. The control rods are located alongside the column. With 32 x 4 in. tires, the five-passenger open car sells at £395.

Wolseley Modifications

Six separate chassis models are again included in the Wolseley program. Quite minor changes have been made in the design of all except the 15 hp., which has been redesigned in many important parts and now sells at £745 as compared with £475 for the 14 hp., which last year differed from it only in having an L-head instead of an overhead camshaft engine.

In the overhead camshaft engine, adjustable and individual oil feeds are now provided for each cam, while the spiral bevel gears at the head of the vertical driveshaft are housed in a separate casing instead of being inclosed with the overhead valve gear by a full length cover, the idea being to induce greater quietude. The camshaft drive has been altered and now consists of a silent chain drive from the three-bearing crankshaft to the generator on one side and a countershaft on the other; from the latter the drive to the camshaft is by spiral bevel gears and vertical shaft, the latter being fitted with a spring steel blade coupling at the middle of its length, to dampen out vibrations.

A more effective heating system for the intake has been adopted, a large exhaust jacket inclosing a big proportion of the manifold and discharging through a muffler of its own. For the cooling system, a Rayfield thermostat has been adopted, and a reversion has been made to battery ignition, the system used being the B. L. I. C., which is the product of another concern which is a subsidiary of Vickers.

The multiple-plate clutch running in oil has been retained and has, in fact, been fitted to the 1924 Fourteen, in place of the cone pattern which the latter has had during 1923.

Last year in the Fifteen a four-speed gearset was introduced as optional at an extra cost; now it has been made standard, as before with right-hand control and separately mounted, the clutch coupling shaft having a fabric joint in front and a sliding block joint at the rear. Behind the gearset the first alteration consists of an open propeller-shaft in place of one semi-inclosed within a torque tube having its anchorage below a cross member 12 or 14 in. behind the gear casing. The new open shaft has a fabric joint in front and a sliding universal behind; a separate torque member is used, with a front anchorage between helical springs, the drive being taken by the quarter-elliptic springs. Another departure is from underhung worm-drive to spiral bevel gearing, though the worm is continued on the Fourteen. Then, too, the diameter of the rear brake drums has been increased to 18 in., though the arrangement of the four shoes in the same plane in each drum is continued. The track has been increased to 56½ in. to allow of five-seated bodies to be fitted, and two wheelbase lengths are offered, 118 in. and 129 in.

In bodywork, the Wolseley company has the biggest range of any British maker after Daimlers. There are between 30 and 40 body types available, and in the 10-hp. cars there are "standard" and "de luxe" types implying variations in upholstery, finish and equipment.

Overhead Camshaft Beardmore

The Beardmore (2⅞ x 4½ in.) engine has been redesigned; the overhead camshaft being now driven by silent chains instead of by a vertical shaft. There are three chains, one connecting the crankshaft with an intermediate shaft on which is mounted a 3-bladed cast aluminum fan. On this intermediate shaft there are two other sprockets, one for a chain which passes up to the camshaft and the other for a third chain which drives the generator on the right and the magneto on the left of the cylinder block. The overhead valves are fitted with two springs, while a third much lighter spring serves to keep an air leak preventer in place on each valve stem.

The carbureter is a Zenith and is bolted to an integral manifold. It has two air inlets. Cold air is admitted through helical fins to give it a whirling motion, while hot air is taken in through an aluminum extension pipe bolted to a flanged port on the side of the aluminum valve cover. On the left of the latter is another flanged port to which is bolted an aluminum hot-air muff on the exhaust manifold. Approximately one-half of the ingoing air is therefore heated, and while passing through the valve chamber it takes up oil in the form of a mist. Lubrication is on the hollow shaft system, with a direct lead to the overhead camshaft.

Water circulation is by thermosiphon and, to prevent the formation of steam pockets, two outlets are provided from the cylinder head to the radiator, one on each side, and also two pipes between the bottom of the radiator and the cylinder block. The engine and gearset are a unit, four speeds and central control being provided. The clutch is of the single disk type, and the propeller-shaft exposed, with metallic universal joints encased in greaseproof rubber covers. A feature of the spiral bevel gear axle is the provision of external means for readily adjusting the mesh of the gears. Each bearing of the differential casing is supported by a sleeve which has worm wheel teeth cut on its outside, with which engages a worm whose spindle extends through the case and has its end squared to take a wrench.

Both sets of brakes act upon the rear wheels; suspension is by half-elliptic springs fore and aft, inclosed in gaiters, while the steering gear is of the worm and nut type. A point of distinction in the standard four-seated body is that the front seats are adjustable, not only for leg reach but also for angle of cushion and back. Another feature is the provision of detachable valances secured by wing nuts, inclosing the toolbox on the right and the battery on the left. The price of this complete car is £395.

New Cubitt Has Lower Frame

The 16-20 hp. Cubitt chassis, which was introduced in 1920 to compete with low-priced American cars in England and overseas, has since undergone numerous modifications. Recently it has been given an appearance more in accord with British ideas by an appreciable lowering of the frame height and center of gravity. S. F. Edge has secured an interest in the undertaking and is likely to make this car a greater success from the sales standpoint than it has been hitherto. The price of the standard five-passenger open body has been reduced to £365. The closed model is £550, this being an all-inclosed limousine with a glass partition that can be lowered.

New Rover "Six"

Supplementing its 8-hp. two-cylinder air-cooled model and the 14-hp. Four, the Rover company has produced a 21-hp. six-cylinder chassis with the same bore and stroke as the Four, viz., 75 x 130 mm. (209 cu. in. piston displacement). Its outstanding features are a positive drive through a friction clutch for the fan, four-wheel braking and an aluminum rear axle casing.

Two detachable heads are used, each covering three of the L-head cylinders; the cylinder block is separate from the crankcase and has its top face machined at an appreciable angle from the horizontal, while the valves are inclined at the same angle from the vertical. Instead of camfollowers of one of the usual types, rocking levers are utilized for valve operation with clearance adjusting studs below the valve stems. Camshaft, rockers and valve springs are all exposed by the removal of the side cover plates.

The under side of the cylinder head units has an absolutely flat surface, the combustion chamber and valve pockets being formed entirely within the cylinder block. Seven white-metal bearings support the crankshaft; the connecting rods are tubular, with piston pins secured to the small ends and floating in the bosses of cast iron pistons. Camshaft and generator drive is by chain. The fan drive is by a vertical shaft and skew gearing. Delco ignition has been standardized, with the distributor on the generator, an extension of the shaft of the latter driving the water pump. Lubrication is forced to the crankshaft journals and big ends.

The gearset is separate from the engine, with four speeds and right-hand control, being slung at three points from two cross-members, one tubular and the other of channel section. The clutch is of the dual plate type, running in oil, with phosphor bronze driven plates. The only feature of note in the gear casing is the provision of a ball bearing on each side of the primary constant mesh wheel and the use of ground gears. An open propellershaft with metallic joints leads to an underslung worm drive within the drum-shaped center of the aluminum axle. Tapered aluminum extensions are reinforced by internal steel tubes that carry the ball bearings of the wheels, the drive shaft being full floating.

Half-elliptic springs are used and the rear ones take the drive only, for a triangular tubular torque member is used. A bracket behind each front spring rear end shackle forms a stop if the spring should break. Frictional shock absorbers are provided. Fuel feed is by vacuum. The front brakes operate on the Perrot automatic-servo system and are actuated by a pedal simultaneously with the rear set; the latter consists of one pair of shoes in each drum, and these are also operable separately by hand lever. Compensation occurs for each set, front and rear, individually; there is none between the two sets. The wheelbase is 137 in., the track 56 in., and the 820 x 120 mm. tires are fitted to steel-spoked wheels.

Longer Wheelbase Napier

The Napier company is now the only British firm confining its efforts to a high-powered high-grade six-cylinder car. This 40-50 hp. (4 x 5 in.) model is now, however, being made with two lengths of wheelbase, the standard with 137 in. being supplemented by a 144-in. wheelbase chassis. The price of the standard model has been reduced from £1,750 to £1,500, though £1,600 is being charged for the longer chassis. In the short wheelbase model transmission and wheel brakes are continued, but in the longer type both brakes are on the rear wheels.

Why Workman Representation Sometimes Fails

By William R. Basset
President of Miller, Franklin, Basset & Company, Inc.

THERE is one outstanding reason why "industrial democracy" has been strikingly successful in some plants, and a disastrous failure in others. The failures in some plants have been due to a combination of causes, but the all but universal reason is—lack of good faith.

A usual part of such systems has been the payment to the men of an economy bonus—a certain share of the savings that they have made in reducing labor and expense cost, and in reducing the waste of materials.

In most cases where these bonuses accurately reflect the savings, industrial democracy has worked.

But there were many plants which were unwilling to do the rather simple accounting necessary to determine the bonus. In several cases I found that the management paid out what it felt it could afford based on current profits. In others, the management would say among themselves, "how little will those highbinders be satisfied with?" While the payments presumably rewarded economies, actually they had no relation to reduced costs.

It did not take the workers many months to find that out. They then either grieved their employers by losing interest in the representation system or angered them by demanding that a definite increase of wages take the place of a gratuity.

There is not a doubt that a lot of well-intentioned manufacturers have suffered unjustly at the hands of labor. But there is also no doubt that some have got exactly what was coming to them. Good faith is fundamental to a successful labor policy.

Just Among Ourselves

Coolidge Likely to Call Transportation Conference

THE stage now is being set for presentation of the great Transportation drama to the solons of the nation at the approaching session of Congress. It certainly will appeal to a large conservative audience but strong efforts will be exerted to make the presentation snappy enough to interest at least a part of those having radical leanings. Magnus Johnson and other avowed partisans of what they consider a down-trodden proletariat will demand government ownership, lower freight rates and other dire railroad punishments. It is to be hoped they will rally little support. One of the purposes of the Transportation Conference set up by the United States Chamber of Commerce was to counteract radical propaganda against the carriers. The reports prepared by this conference have been kept on ice for a month or more. They will be released in broadsides, just before Congress meets, in an effort to arouse public interest in the whole question of coordination and cooperation. It would not be surprising if the next act showed the President calling a big transportation conference.

Selling the Men Who Sell Service Is Good Business

PARTS and accessory manufacturers are attempting to reach the man in overalls and interest him in their products. This cultivation of mechanic interest and good will demonstrates that manufacturers have arrived at the somewhat belated conclusion that purchasers of replacement parts and equipment have confidence in the service stations to which they take their cars and trucks. When they find that confidence is not justified they will promptly take their business to some one else. The mechanic and the service station are learning that a continuance of pleasant personal relations with their customers means good work at a reasonable price. For that reason they are likely to recommend only replacement parts and equipment which they know will give entire satisfaction. Those manufacturers will profit most who create the greatest good will among the men who actually install the products they make.

CAR and truck production in October totalled 361,000, which was only 32,000 under the peak for the year—393,000 in May. This makes it virtually certain the year's production will reach 4,000,000.

Huge U. S. Tire Sign at "World's Crossroads"

THE United States Tire Co., which has made it difficult for tourists not to study history, has erected one of its huge signs atop the second story of the old Claridge Hotel in Times Square. It tells the world, when it comes to the metropolis, that it is in New York. The legend originally was: "You are now in Times Square, the crossroads of the world. New York, biggest city on earth, is now the commercial, financial and amusement center of the planet. New York typifies the enterprising spirit of the American people." Then the lettering was changed to tell about the meeting of General Israel Putnam with George Washington to plan the battle of Harlem. The conference was held just across the street on what was the site of a Shanley restaurant until prohibition drove it out of business. We liked the first draft rather better, although the one which was used is more consistent with the other historical advertising signs erected by the company.

Russia and China About Ready to Be Motorized

COMPANY after company in the automotive field is realizing at last the wonderful possibilities of overseas markets. Those which have cultivated them persistently and continuously are cashing in on their pioneering. They know that there is no "saturation point" for motor vehicles abroad any more than there is at home. As a matter of fact, the surface of the export field scarcely has been scratched. Sooner or later Russia and China will begin to buy and when they do there will be no limit to the potentialities of these markets. It might be a profitable investment for a few large manufacturers to provide the necessary capital and get permission from the proper governmental authorities of Russia or China to demonstrate what can be done in a limited territory by motorizing the farms and villages just as has been done in our own agricultural states. The chances are 100 to 1 that the results in increased productivity and profits would be so amazing that both countries would find some way of providing funds for large purchases of automotive equipment. Increased agricultural production will protect them against famine.

ANNOUNCEMENT that the N. A. C. C. will establish a Safety and Traffic Department is not only interesting but gratifying. This organization is the one which should study the diverse and complex problems of handling the enormous volume of motor vehicle traffic and the entire industry should be guided in its efforts by recommendations which will be made. This and other expansion plans of the Chamber are indicative of its increasing usefulness.

More or Less Pertinent Comment on Topics of Current Interest to Men in the Industry

Junk Pile or Museum Place for Relics of Past

MANUFACTURERS and dealers seem to have developed something of a mania for digging up cars of ancient vintage, which will still run and displaying them proudly to prove that the cars they make will run on and on forever, like the brook. Such displays surely are not needed to demonstrate the wearing qualities of American automobiles. They already are well known. As a matter of fact, anyone who has used such a vehicle, year in and year out for a decade or more, probably has spent more for maintenance and repairs than it would have cost him to buy a modern gasoline chariot. The industry is chiefly concerned with the sale of new vehicles and it proves nothing to dig up one of a past generation to show that the wheels still will go 'round. It pays to keep a car only as long as the cost of maintenance does not exceed its actual worth. These relics, except those which are being preserved as curiosities, should have been committed to the junk pile long ago.

Dealers Are Becoming Students of Economics

WHILE a good many automobile manufacturers are predicting that 1924 will be a bigger year in sales than 1923, their dealers are considerably more conservative. Generally speaking, they are looking for a good but not a sensational business. What is more important, they propose to make their commitments on that basis. Able dealers, and there are a lot of them in the aggregate, rapidly are becoming intelligent students of economics. They are hungry for information which will give them a line on what to expect in the way of general business because they realize that motor vehicle sales are extremely sensitive to its reactions. They are not unmindful of the slowing up which may be expected coincidentally with the presidential campaign and propose to be prepared for it. As they have become better business men they have become more independent and they prefer to do their own thinking rather than let their factories do it for them. Factories want their dealers to become better merchandisers but the dealers want also to make more money.

WASHINGTON'S newspaper correspondents have discovered that Muscle Shoals will be one of the major problems at the coming session of Congress and they are seeking information on the subject which will be unbiased and free from the taint of propaganda. The battle promises to be fast and furious when it gets to the floor. Senator Ladd of North Dakota, one of the farm bloc, and an advocate of the Ford proposal, characterizes transfer of the Gorgas plant to the Alabama Power Co. as "a feverish effort" to get the property into the hands of the power company before Congress meets.

Again the Moan Is Heard, Automobiles Are Parasites

AWAY back in 1920 when automobiles were classed as luxuries and persons of moderate means who bought them as lunatics or imbeciles, solemn "alarums" were sounded every day about the fate which would befall the industry. When the bottom dropped out of business and people quit buying motor cars, these prophets chortled with glee. The end had come, they said, and the industry had been wiped off the map. Then they got so busy nursing their own wounds that they forgot about the evils of automobiles. Then the motor vehicle market came back and helped drag the rest of the country back with it. Everybody was busy and the automotive industry was left in peace for a year or two. It wasn't possible to turn out goods of any kind fast enough. Now production in some lines has caught up with demand and sundry gentlemen again have time to explain why they think automobiles are merely parasites clinging in profusion to a writhing body politic. Jealousy is primarily responsible for these rarebit dreams. Sad to relate, however, some persons within the industry seem to take them seriously.

Snowless Highways Will Promote Bus Operation

MANAGERS of traction companies in northern states where the snow fall is heavy, contend that the low-hung coaches so popular on the Pacific coast cannot be used to advantage for year 'round service in sections where the climate is more rigorous. They do not deny the comforts and advantages of buses of that type, but merely that the element of snow and ice must be considered. Only experience can determine whether they are right or wrong. They should not, however, overlook the fact that the movement to keep the highways clear of ice and snow is gaining momentum every year and that the time is not distant when main roads will be passable every day in the year. Under such circumstances the low hung bus would seem to be just as well adapted to this climate as any other. Developments in bus construction are coming so rapidly that it would be unsafe to predict what even two or three years may bring.

J. D.

New Star, Selling for $490, Leaves Ford Price Class

Marked improvements made in chassis and body construction. Deeper radiators and better finish provided. Hood has been redesigned. Sills and door posts are heavier in closed models. Revision of brake rod layout has been included in changes.

AN increase in price, taking the Star car well out of the Ford price class and bringing it close to that of the smaller Chevrolet and Overland models, is the outstanding feature of the new Star line. The change in price is accompanied, however, by some marked improvements in construction of both chassis and open bodies and by the introduction of specially painted bodies together with the nickel plated radiator shell, head-lamps, etc., usually associated with so-called "sport" models. The special jobs sell at a higher price than the standard line, which is painted black and fitted with 30 x 3½-in. fabric clincher tires, while the special jobs have 31 x 4-in. straightside cords.

The new and old prices on the various models follow:

Standard	New	Old
Roadster	$490	$414
Touring Car	490	443
Coupe	640	580
Sedan	785	645
Special ("Sport")		
Touring Car	$640	...
Sedan	935	...

All prices f.o.b. Lansing, Mich.

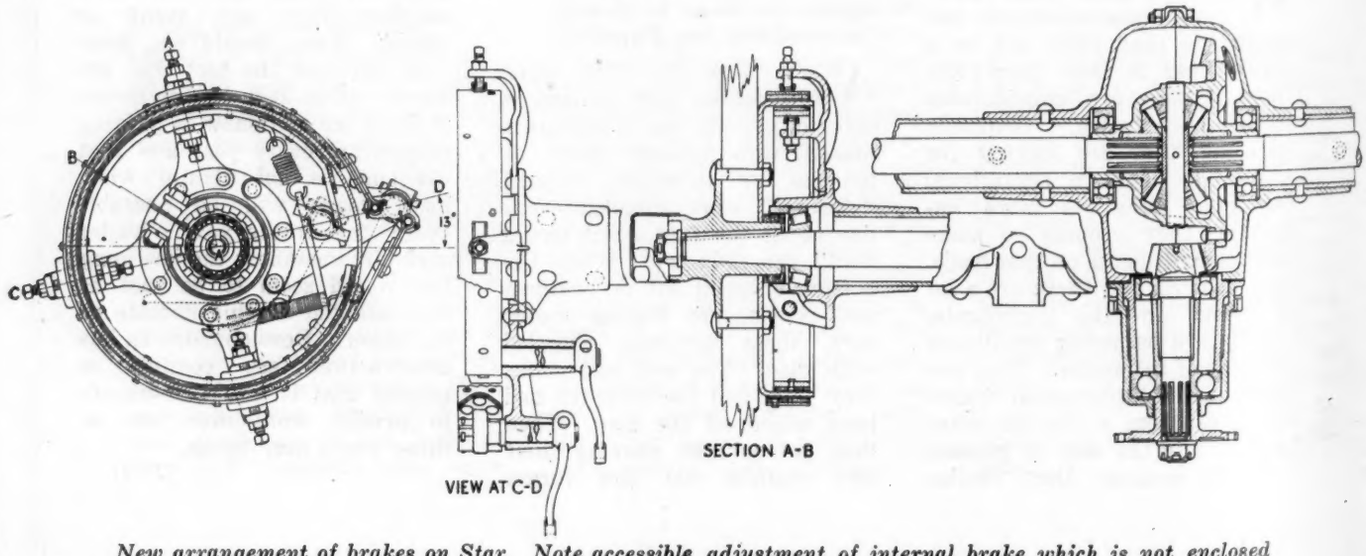
A deeper and much better appearing radiator is fitted to all models and since this radiator measures 3 in. more from top to bottom than formerly and since it was not possible to raise the filler cap without radical changes in body lines, the bottom of the radiator is lower. This, in turn, necessitated the chief alteration in chassis construction—a change in the shape of the front cross rail of the frame and elimination of the corner braces, diagonal angles, which formerly supported the steering gear and forward engine bearers. Engine and steering gear are now supported on malleable castings which are riveted to the side members and to the new front cross member.

Brake Rod Layout Changed

A complete revision in the layout of the brake rods makes these substantially identical with those used on other Durant cars and overcomes certain difficulties encountered with the ribbon type of pull bands used heretofore.

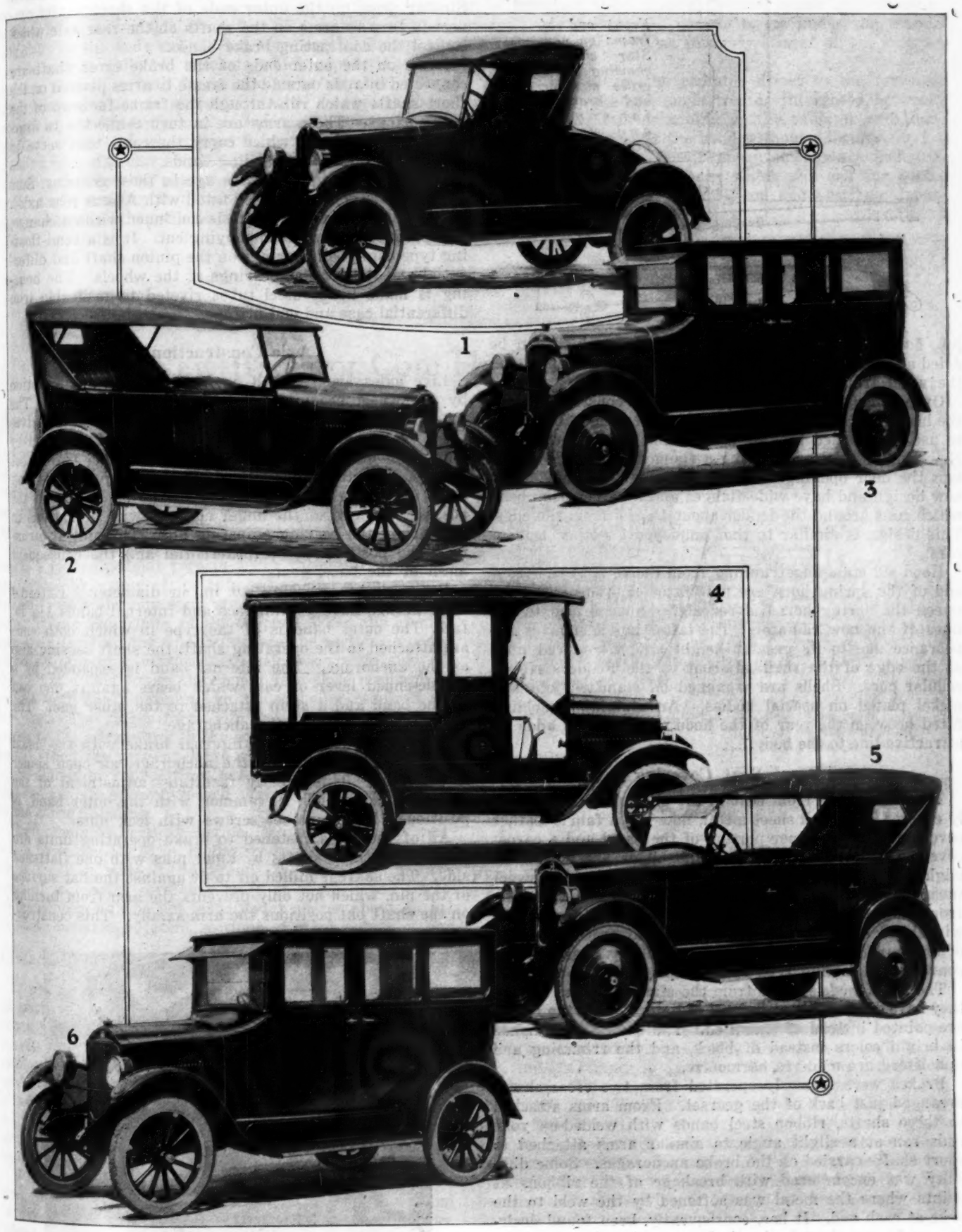
Spark and throttle control levers are now mounted on the steering column under the wheel instead of on the dash.

Except for slight changes in trimming and the painting in colors of special models, closed bodies remain about the same as heretofore, but there have been a number of changes in the open bodies, calculated to make them more substantial from a structural standpoint and to improve their general and detail appearance. A better grade of upholstery and top materials is used and most of the body frame members are strengthened and made of a better grade of lumber than could be used in the former low-priced jobs. On account of difficulties encountered with the use of high bake japan finish on a wood frame

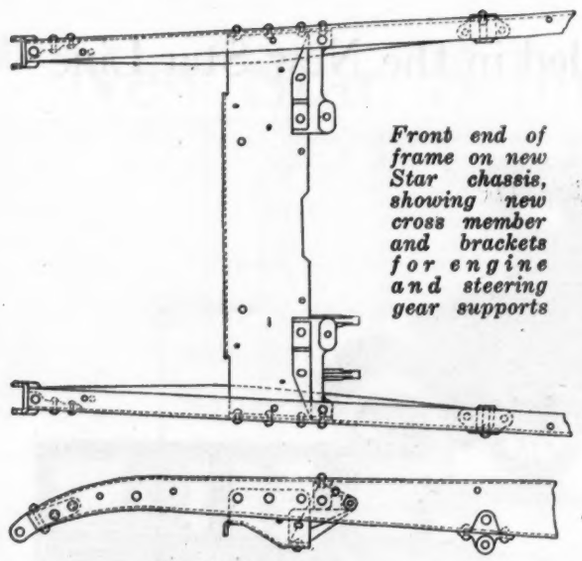


New arrangement of brakes on Star. Note accessible adjustment of internal brake which is not enclosed with an inner disk

Some of the Body Types Included in the New Star Line



1. *Roadster*, $490.
2. *Phaeton*, $490.
3. *Special sedan*, $935.
4. *Delivery wagon with 6-post top.*
5. *Special phaeton*, $640.
6. *Sedan*, $785.



Front end of frame on new Star chassis, showing new cross member and brackets for engine and steering gear supports

job, bodies are now finished with enamels which can be dried at lower temperatures without detrimental effects on the wood frame.

Of particular importance in the body construction are the heavier sills and door posts. The latter make it possible to use a concealed type of hinge. Doors are now of the New England pattern, having a flanged edge which overlaps the door opening. All of the fenders are made to a new design and have wide flanges and a rather deep bead which runs around the fender about 1½ in. from the edge. This design is similar to that employed on other Durant cars.

Hood sill stampings running from the cowl to the front end of the spring horn are now fitted and the apron between the spring horns is redesigned to conform to the lines of the new radiator. The latter has a smarter appearance due to its greater height and the curved lines at the edge of the shell adjacent to the Fedders ribbon cellular core. Shells are japanned on standard jobs and nickel plated on special bodies. An aluminum molding fitted between the rear of the hood and the cowl adds an attractive line to the body.

Front Seat Covering

The back of the front seat in the phaeton body, formerly covered only with sheet metal, now has a fabric leather covering over the upper portion of the panel and a carpet covering the lower portion. Windshields are now made slightly wider at the center, but the uprights are swept inward as they approach the cowl to give a more pleasing frontal appearance. Bolt heads which come through the windshield supports are now rounded to prevent cutting of the curtains. Top design is practically unchanged, a conventional folding type being employed.

The sport models differ from the standard types in that they have disk wheels and nickel radiators, while the bodies are painted instead of enameled. The bodies are finished in bright colors instead of black, and the trimming and upholstery are made to harmonize.

Brakes were formerly operated from two cross shafts arranged just back of the gearset. From arms attached to these shafts, ribbon steel bands with welded-on yoke ends ran at a slight angle to similar arms attached to short shafts carried on the brake anchorages. Some difficulty was encountered with breakage of the ribbons at points where the metal was softened by the weld to the yoke at each end. It has, consequently, been found desirable to fit two short brake shafts, one at each side of the frame at points just forward of the front ends of the rear springs. These shafts are carried in brackets riveted to the frame and run through the frame. Rods, running inside the frame from the foot-brake cross shaft arms, connect to arms rigidly attached to the short shafts. Similar arms on the outer ends of the short shafts connect in turn to arms on the shafts on the rear axle which control the contracting brake bands.

Arms on the outer ends of the brake cross shaft are connected by rods outside the frame to arms pivoted on the short shafts which run through the frame forward of the rear springs. These arms are in turn connected to arms on axle brake shafts which carry the cams that serve to operate the internal expanding bands.

As announced some months ago in these columns, Star cars have for some time been fitted with Adams rear axles. A drawing of this axle, which is continued without change, is reproduced in an accompanying cut. It is a semi-floating type using ball bearings on the pinion shaft and differential and taper roller bearings at the wheels. The housing is made up of steel tubes riveted to malleable iron differential case and end fittings.

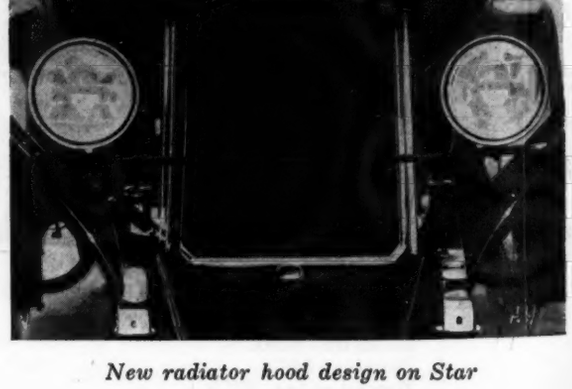
Axle Construction

Live axles are retained against outward axial motion by the wheel bearing, which has a tapered bore. The outer race of the bearing rests against a nut which gives the necessary endwise adjustment. This nut is locked by a finger pivoted on a bolt which clamps together two bosses on a split section of the hub. Drawing up on this bolt locks the finger which is placed in the slot between the bosses. The end of the finger engages with serrations in the face of the bearing adjusting nut. This nut also controls the position of the differential and the consequent mesh of the bevel gears.

Brake drums measure 10 in. in diameter. External band linings have 1½ in. face and internal bands 1¼ in. face. The outer band is of the type in which both ends are attached to the operating shaft, the shaft serving also as the anchorage. The internal band is expanded by a double-ended lever or cam which bears against one end of the band and a strip attached to the other end. The camshaft is here, also the anchorage.

Instead of inclosing the internal brake with the usual plate construction around the anchorage, an open spider is employed. This greatly facilitates adjustment of the internal band which, in common with the outer band, is positioned by simple set screws with lock nuts.

All of the arms fastened to brake operating units are attached to these shafts by taper pins with one flattened side. The shaft is milled off to fit against the flat surface of the pin, which not only prevents the arm from turning on the shaft but positions the arm axially. This construc-



New radiator hood design on Star

tion also makes for rapid assembly. It is necessary only to drive the taper pin home and the assembly is completed.

By reference to the accompanying drawing of the front end of the frame, it will be observed that the front cross member is a rather flat stamping of irregular section flanged up at the ends and riveted between the flanges of the side rails. Malleable brackets which support the engine are riveted to both frame and cross member. The left bracket also forms a trunnion with transverse axis upon which the steering gear is mounted. The latter is the same worm and wheel type formerly used, but with its casing altered to carry a pin which fits into the trunnion. Formerly, the steering gear was anchored securely to the corner angle, making it difficult to adjust the angle of column to meet slight variations in body dimensions. The trunnion mounting renders this adjustment automatic.

Steering columns are now bracketed to both dash and instrument board. The upper end of the column is housed in a flattened tube through which spark and throttle control rods pass to the control levers under the wheel. These levers replace those formerly located on the instrument board.

Instead of bolting the radiator direct to the forward cross member, a short angle iron is interposed between the two to facilitate shimming up the radiator and thus making it possible to fit the hood without difficulty.

The passenger car chassis improvements are included in the delivery wagon chassis, which will sell for $405. The delivery wagon with panel, top and vestibule front will continue to sell for $610.

New Radiator Core Has Aluminum Fins

A NEW form of radiator core in which the indirect radiating surface is of aluminum instead of the conventional copper has recently been developed by the Stolp Co. It is claimed that this core is capable of dissipating from two to three times the amount of heat per pound of metal used as is given up by the more common types of core.

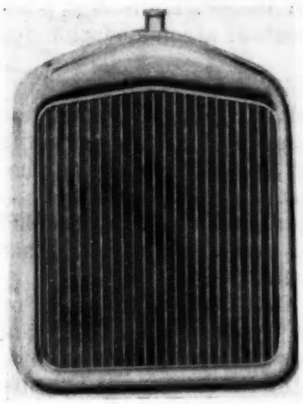
From the accompanying cuts it will be seen that the core is a ribbon cellular type in which the water passages are formed by copper strips crimped around a fin section formed from aluminum strip stock bent into convolutions which fit into the crimps of the copper. When the aluminum strip forming the fins is in place the section is completed by stamping vertical depressions on each side of the section. This forces the copper into close mechanical contact with the aluminum, no solder being required at the joint. The ridges formed in the copper are at right angles to the crimps and to the convolutions of the aluminum. When the vertical depressions are made the edges of the aluminum convolutions are depressed in such a way that the fins are securely locked against motion in relation to the copper binding.

Each complete vertical section is a self-contained unit which measures 13/16 in. at the front and back edges and about 11/16 in. wide at the center. When sections are assembled to form a core they mate at the crimped edges of the copper ribbons but leave water spaces about ⅛ in. in width between adjacent sections at other points.

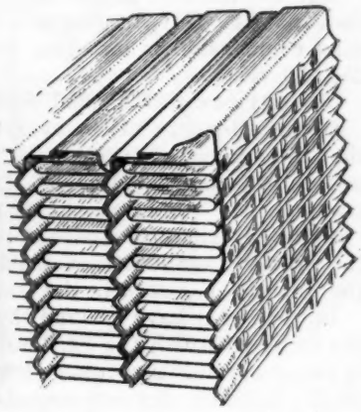
Contact Between Aluminum and Solder Prevented

It will be noted that the aluminum strips are about ½ in. narrower than the copper so that the fins are inseted about ¼ in. at both front and back of the core. Consequently, in dipping the core to solder the joints between sections, it is not necessary to bring the aluminum into contact with the solder. It is claimed that the quantity of solder required is 1 to 1½ lb. per core, as compared to 4 to 6 lb. in other cores. The core is said to contain an average of about 50 pieces of metal as against 125 pieces in other cores.

Weight of metal in the core is placed at 75 per cent of that in other cores while the radiating surface per pound is given as double to three times that in other cores. About the same ratio is said to apply in respect to heat radiated per pound of metal, but the heat dissipated per square foot per degree temperature difference is 10 to 20 per cent less for Stolp than for other cores, according to the makers.



Radiator with new Stolp core



Sketch showing type of construction used in Stolp radiator core

Red Eye Spring

THE Saving Spring Co., a concern which has recently entered the field of chassis springs for commercial vehicles, is turning out a spring which possesses special features in connection with the spring eye. It has been observed that truck springs frequently break near the eye, and the reason is claimed to be that the brittleness which is ordinarily associated with springiness causes the spring to give way at this point prematurely, owing to repeated stress. To make the eye portion more enduring under repeated stress, the eye is formed in a single heating, and its temper is drawn so as to greatly reduce the hardness. Whereas the hardness of the spring itself is about 410 Brinell, that of the eye is reduced to from 295 to 305 Brinell.

It is the belief of the Saving Spring Co. that every heating depreciates the steel, and for this reason the eye is formed in a single heating, instead of two or three heatings. That drawing of the temper increases the endurance is in accordance with the results of endurance tests.

Red eye springs are made from electric furnace chrome-silicon-manganese steel.

St. Louis Is Spending $30,000,000 for 235 Miles of Major Streets

Planning commission makes provision for 150 per cent increase in motor vehicle registration. Automobile dealers lend assistance.

By Lynn M. Shaw

Assistant General Manager
National Automobile Dealers Association

THIRTY million dollars is being spent by St. Louis for 235 miles of major streets.

Major streets, in the vision of St. Louis, are needed to handle the steadily increasing traffic of the city.

But the interest of the automotive industry lies in the fact that the 15-year program of the St. Louis city planning commission is based on eventual accommodation for 250,000 vehicles.

The city now has 100,000 vehicles.

Observations in cities everywhere have convinced me that the subject of traffic relief has been only superficially understood or considered by the elements of the automotive industry which should be most vitally interested.

Blare of trumpets and a lot of publicity has attended the sporadic outbursts of traffic study and analysis that the industry has seen in the last five years.

In none of it have I found the fundamental character of the basis on which the St. Louis "Major Street" program is being carried through. It has been progressing since 1916. The first physical aspects of its values and benefits have been startling. But they point unerringly to the truth that is at the bottom of the plan—elementary principles which justify the expenditure of the $30,000,000 which will be required of the taxpayers and property owners.

Overlooking entirely, however, the property value increment which is an inseparable part of the relief of traffic congestion, and the humanitarian elements that also cannot be divorced from the good results of the project, there is the big item in which the automotive industry is particularly interested—the provision for an increase of 150,000 vehicles in present vehicular traffic.

Big Job Has Been Started

Part of the job that has been undertaken in St. Louis can be realized by just a few salient items:

The total street system is now 940 miles.

The major streets will total 235 miles.

One of these major streets will be 19 miles long and for practically its entire length will be 100 ft. wide.

This street is a huge arc swinging from the southwest corner of the city to almost the eastern edge along the river and then bending back again to the extreme northwest corner of the city. Broadway, to the east of this street, will be another arc parallel to the first.

Down the center of the fanlike spread of these major streets is Olive Street, which will be widened to 100 ft. for more than 9000 ft. of its course toward the residence district.

Sixteen thousand feet must be widened along Market and Walnut Streets westward for another great artery of 100 ft. width, carrying six lines of motor vehicles and street railway. And so they spread until there has been achieved a web of major streets so woven that no property within the wide flung city limits will be more than one-quarter mile from a major street.

The peculiar topography of St. Louis aids in this plan. The city stretches along a high bank of the Mississippi River. The checkerboard street plan used by William Penn in laying out Philadelphia was faithfully copied in the first street system of the waterfront. It is easy to see the progress of city growth in the steadily widening streets in the direction away from the river. It is particularly noticeable that this also tended to establish jogs, bad wedge corners, curving streets and diagonals.

Radial Street Plan Used

All of these apparent disadvantages have been utilized by the City Plan commission in development of its plan on a radial street layout. The heaviest of traffic demands was first discovered at about the juncture of Fourth and Olive Streets, almost the center of the financial district and practically a pivot point for the city. From this point the fanlike conception of the major street plan will sweep traffic through wide lanes, in great parades, spreading it speedily away from central congestion.

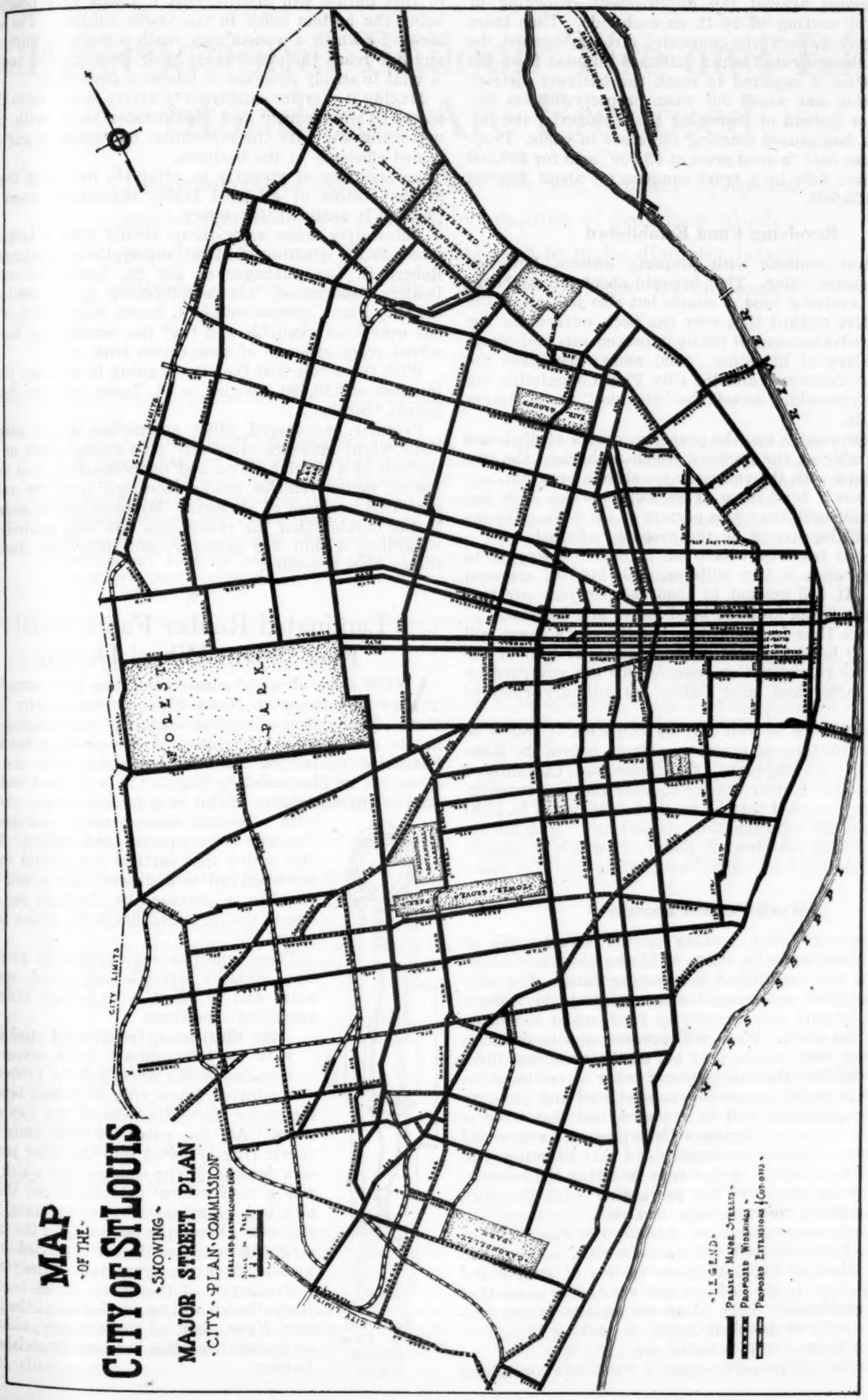
Twelfth Boulevard, Washington Boulevard and Kingshighway have already been completed in part. Some of this work established an extension to and connection of Gravois Road and Twelfth Boulevard. When this was begun there was at Market and Twelfth a vehicular traffic of 3178 vehicles per day. The real traffic center was a half mile to the northeast at Locust Street. In 1922 the Twelfth Boulevard extension had changed the current of traffic to south of Market Street to the Lafayette Street intersection, where the count is now more than 11,000 per day a mile southwest of Locust Street.

This is the traffic that pours toward the financial and office building district in the morning and away from it at night. It formerly was forced into the narrow neck of archaic streets that under no stretch of the imagination could be dignified by the term of traffic ways in these "modern" times.

Then came this significant development: Before this traffic improvement, almost all of the city growth and new home section development was in the far northwest section. It was easy to reach.

In 1922 and 1923 almost all of the new development and home development has been centered in the southwest, because the opening of one traffic artery had made that part of the city accessible.

Along Washington Boulevard property owners had bit-



A total of 235 miles of major streets is included in the $30,000,000 plan for taking care of increased traffic in St. Louis

terly contended against the improvement—widening of the street by cutting off 10 ft. on each side. Then there were property owners who contended strongly against the Lindell Boulevard cutoff which trimmed minutes from the length of time it required to reach the business district. All opposition was wiped out when property owners discovered that instead of damaging their property, the improvements had caused amazing increases in value. Property that was held "a good price at $3,000" sold for $30,000 and one piece held by a trust company at about $88,000 sold for $125,000.

Revolving Fund Established

These first contests with property owners, however, were of immense value. They brought about the establishment of a revolving fund, a simple but also just about the most effective method that ever has been worked out for permitting advancement of public improvements and escaping the delays of litigation. And more, they gave the Chamber of Commerce and the City Plan Commission the information on which to sell the "big idea" to the voters of St. Louis.

Just a few months ago the property owners of St. Louis voted favorably on the proposal which authorized the city to go forward with the entire major streets program.

In this was a bond issue of $8,000,000 which it is anticipated will cover the city's portion of the cost. The remainder will be carried by the property affected.

The special tax levy which the taxpayers approved to handle the bonds is two mills on each $100 of assessed valuation. It will amount to about $4 per year per taxpayer, at the "peak load" of bond issues and interest.

Experience thus far indicates that the city's share will run from 19 to 35 per cent on any particular unit of the project. The condemnation commissions are governed by the city charter and must follow the ordinary rules of procedure.

If the city were to wait for the litigation it would be beyond the life term of present residents before the plans could be carried through. One case was encountered where a wealthy former brewer opposed the improvement. For a time it seemed that he would be successful in picking flaws in the condemnation proceedings. Had his remonstrance been sustained on the errors which he alleged, the city could not have reinstituted action until ten years had passed.

Work Pushed Rapidly

To prevent litigation holding up the actual work of tearing out whole blocks, strips of blocks and whole buildings, there was established a revolving fund. The estimated amount of maximum damages to property along a street will be paid into a revolving fund, under the jurisdiction of the court. Work will proceed, and as damages are awarded, they will be paid out of the revolving fund. It is believed that the experience of other street improvements, where traffic congestion was relieved and property made more accessible, will be repeated, and that when it comes time to collect damages the property owners will see the value of the improvement, and that litigation will be reduced enormously by the very fact that the commission has made provision for proceeding with its work without awaiting court damage awards.

When congestion began to throttle the free flow of traffic that has come with the motor vehicle, we began to give more thought to an adequate system of streets and traffic ways. St. Louis business men have come to see that there is considerably more of an elementary nature concerned in traffic than the principle of making it easy to drive through the city in a motor car.

Accessibility of property—just a little brief weighing of that phrase will disclose that it comes very nearly to being the bottom brick in the traffic subject. The easy access by which a woman may reach a store, or buyers in any line reach the place where their goods can be bought, is vital to steady progress of business anywhere.

Making it easy for employees to arrive at and leave their places of employment has considerable to do with their well-being and with the economical management and personnel efficiency of the business.

Accessibility of property is, after all, the thing that is at the bottom of all good traffic regulation, when the problem is analyzed thoroughly.

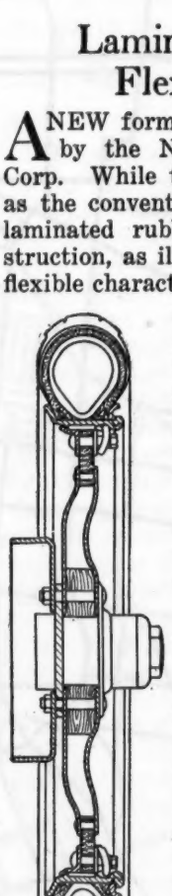
Automotive trade associations should take a large interest in the question of street and highway development. Robert E. Lee, manager of the St. Louis Automobile Dealers Association, was complimented by an official of the City Plan Commission of St. Louis, who said that Lee has ever been available and that the commission has received every measure of cooperation from him.

With the result that the city is going to arrange for an increase of 150,000 vehicles in St. Louis and the dealers benefit thereby.

Properly encouraged, other automobile dealer associations might influence other city plan commissions or city councils to a similar vision and understanding that wider use of motor vehicles means increased property values, increased business of all sorts. My observation leads me to the opinion that the traffic idea has been entirely too superficial within this industry, and that close study of the problem is needed.

Laminated Rubber Fabric Used Flex-sil-ient Wheel Design

A NEW form of wheel construction has been introduced by the Newport News Shipbuilding & Dry Dock Corp. While this wheel has much the same appearance as the conventional disc wheel, it is unique in having a laminated rubberized fabric incorporated into its construction, as illustrated by Fig. 1. It is claimed that the flexible characteristics of this ring produce longer car life with attendant easier riding and greater freedom from squeaks and rattles. It is also stated that vertical and lateral shocks are absorbed to a greater extent and that tire life is increased by about 30 per cent due to the increased flexibility which is obtained.



Sectional view Flex-sil-ient Wheel

These qualities are expected to give the new product exceptionally good service value and to adapt it to a wide range of operating conditions.

As illustrated, two-formed steel discs with an intermediate wood spacer are mounted on the wheel hub. A rubberized laminated fabric ring is riveted between the outer circumferences of the two steel discs. At its outer circumference the fabric ring is bolted into the inner portion of a detachable rim construction which carries a conventional detachable rim that is attached by means of a wedge ring, lugs and nuts. Due to the flexibility of the fabric ring, the weight of the car is carried in suspension from the upper half of the rim.

Production of this wheel, which is styled Flex-sil-ient, will be carried on at the Newport News plant of the company, although an automotive office has been established in Detroit.

International Balloon Tire and Rim Standards Are Proposed

Disadvantages of existing straight side and clincher equipment can be overcome, it is claimed, by adoption of drop base which is popular in Europe. Narrow seats tend to make diameter larger. 29x4½, 30x5, 32x6, 34x7 and 36x8 sizes recommended.

By Colin Macbeth
Engineer, Dunlop Rubber Co., Ltd., England

WELL-INFORMED tire men state that the few disadvantages encountered with some of the earlier balloon tires manufactured have now been entirely overcome and that the new type is likely to see very wide use as soon as standard sizes are agreed upon and manufacturing facilities can be altered to produce tires, as well as tubes, rims and wheels suitable for it.

In this article the views and experience of a prominent British tire manufacturer are set forth and certain proposed standard dimensions, based upon commercial as well as extensive experimental work on balloon and other tires, are suggested.

Constructive comments or criticism of the proposals will be welcomed.

UNLESS a universal standard as regards low-pressure or so-called "balloon" tire dimensions, rim contour, and valve connection is arrived at, it will not be possible to derive the full advantage of these new and better tires.

In arriving at a new standard it is essential that, as far as possible, such equipment shall not be subject to the disadvantages entailed by the use of existing clincher and straight-side equipment.

These disadvantages can be summarized as follows:

Common to Both Clincher and Straight Side

(a) Difficulty in fitting.
(b) Inability to stand abuse, as when run deflated.
(c) Difficulty in arranging for application to disk wheels without using angle valves.
(d) Necessity of stocking tubes with varying lengths of valves.

Applying Especially to Straight Side

(1) Extra weight in rim.
(2) Flap troubles.
(3) Water ingress troubles.
(4) Greater cost.
(5) Greater complication.

Applying Especially to Clincher

(1) Liability to rim cutting.
(2) Liability to damage when run deflated.

Neither of the two common attachment methods fulfills the users' requirements, for, though in the United States the clincher tire is no longer popular, in Europe, where a choice of both types of equipment is offered, there is not sufficient advantage in favor of straight-side tires to have warranted a change over as compared with clincher cords.

Outside diameter is the all-important dimension as regards actual road contact considerations. If there is a wide departure from existing equipment it will seriously affect gear ratios, ground clearances and chassis clearance.

Bead seat diameters is of next greatest moment, as any multiplication of diameters will prevent a choice of tire sections on a given wheel.

Tire section diameter controls the "factor of comfort" and, because of its effect on riding qualities, is the most important feature. It should not affect unreasonably existing clearances.

Disagreement on Rim Width

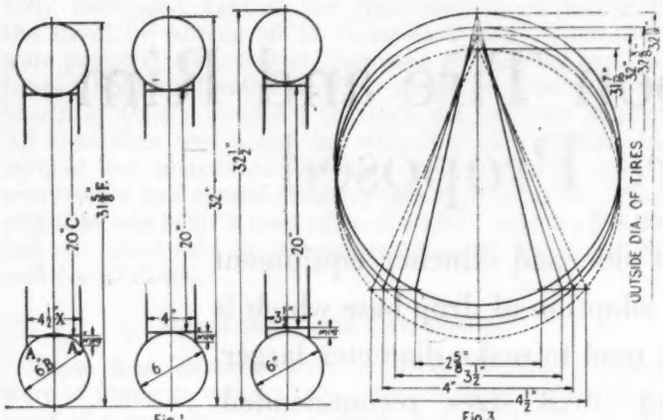
Rim width between flanges is a dimension on which opinions vary. At first sight it would appear to be of little importance apart from side sway or tendency to roll, which undoubtedly depends on the effective rim width.

There is, however, another important point which is affected by the rim width, namely, the tire sectional diameter. As an example showing the effect of varying rim width, assume a tire as having 32-in. outside diameter and 20-in. rim seat diameter and giving a resultant possible tire section of 6 in.

In practice we know, however, that an automobile tire cannot be made in round section, due to the means of attachment breaking the circle of section. Fig. 1 shows, diagrammatically, a tire attached to a rim at points A. The tire section, B, is a fixed dimension. The bead seat diameter, C, is also fixed. If, however, we vary the dimension X, we will vary the outside tire diameter, E.

From this it is obvious that, if we use a wide rim, we get a smaller diameter tire. Conversely, a narrow rim will give us a larger diameter tire.

With a given load, tires will roll when cornering if air pressure is low enough. The resistance to rolling of



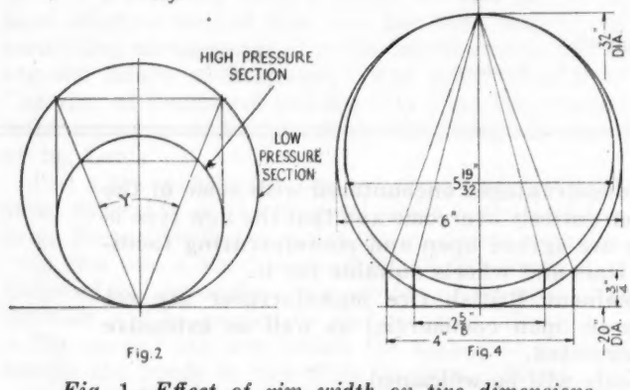


Fig. 1—Effect of rim width on tire dimensions when using wheel diameter, section and flange depth. Fig. 2—Stability angle, Y, in relation to high and low pressure tires. Fig. 3—Effect of rim width on tire diameter with wheel and section diameters and flange height constant. Fig. 4—Great effect of flange width on section and stability with constant tire and wheel diameter and flange depth

a given section depends upon load and air pressure. Normal tires, as used with high pressure, are recognized as being able to function without rolling when properly inflated to suit their rated load.

To insure that the big section tire shall be equally well able to resist rolling tendency it is necessary that it have similar proportions as regards effective rim width in relation to section depth.

Fig. 2 shows that if the angle of stability, Y, is retained uniform for all sections, the big section tires will resist rolling as well as standard tires. In evolving a range of balloon tires and rims it would appear logical that a suitable range should fulfill the following requirements:

Outside diameters should be as few as is consistent with a close approximation to present gear ratio and ground clearance requirements, but not allowing for extreme diameters often called for on account of easy riding as apart from increased ground clearance. The low-pressure tire provides such a great increase in comfort that large wheel diameters count for little in this direction.

Wheel diameters should be limited to one standard if possible, but should provide for interchangeability of sections on same rim without trouble.

Rim width should be such as to provide the same lateral stability on low-pressure tires as in the case of high-pressure tires. If this be agreed upon the required rim width can be defined closely.

Tire sectional diameter: Assuming agreement on outside and wheel diameters and rim width, the tire width can be defined closely while still enabling practical tire and rim design questions to be met fully.

Working on these lines and considering the requirements of cars in general all over the world, it appears that a range of five standard tires will fulfill the requirements of the case. Table 1 shows such a range and the principal dimensions of proposed range as against common sizes of straight side and clincher tires in use today.

The width "B" can be left out of the table, as it deals principally with the question of effective radius A, this being the loaded height to axle and showing the effect on the gear of the car.

Wheel diameter: A 20-in. wheel diameter is believed to be acceptable to most American makers.

Rim width: The range of tire and rim sections shows a rim width which is obtained by retaining sectional proportions approximating to standard high-pressure tire practice. The adoption of outside tire diameters, as in Table No. 1, in combination with 20-in. rims and a normal angle of stability gives a rim width, between flanges, of approximately the nominal width of each tire which is substituted by the low-pressure type.

Thus

4½-in. tires instead of 3-in. have a rim width of 3 in.
5-in. tires instead of 3½-in. have a rim width of 3½ in.
6-in. tires instead of 4-in. have a rim width of 4 in.
7-in. tires instead of 4½-in. have a rim width of 4¾ in.
8-in. tires instead of 5-in. have a rim width of 5¼ in.

Users will require in their tires the greatest "absorbability," or shock absorbing qualities, consistent with cost, clearance, weight, appearance and handiness.

The proposed range of five tire sizes makes use of sectional sizes about 50 per cent over those in general use.

The cost of materials used in such a range is no more and can be less than in the high-pressure tires.

Clearances in a vertical direction are not materially affected, as, with the substantial width of rim adopted, the height of section does not require to be excessive on a 20-in. rim. With a narrow rim the outside diameter of

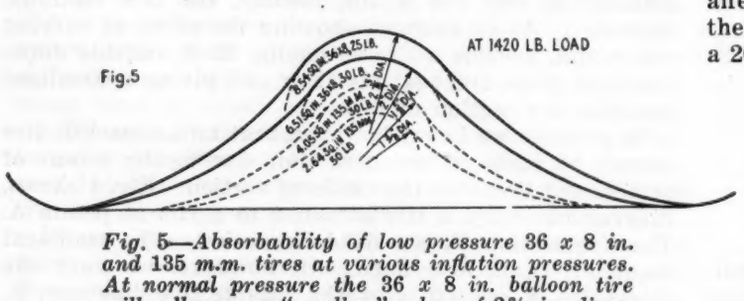


Fig. 5—Absorbability of low pressure 36 x 8 in. and 135 m.m. tires at various inflation pressures. At normal pressure the 36 x 8 in. balloon tire will roll over or "swallow" a bar of 2⅜ in. diameter without raising wheel. Corresponding figures for other tires and conditions given on curves. Figures at left are displacement areas, or sectional area of bar that can be "absorbed" by tire without raising wheel when tire rolls slowly over obstacle

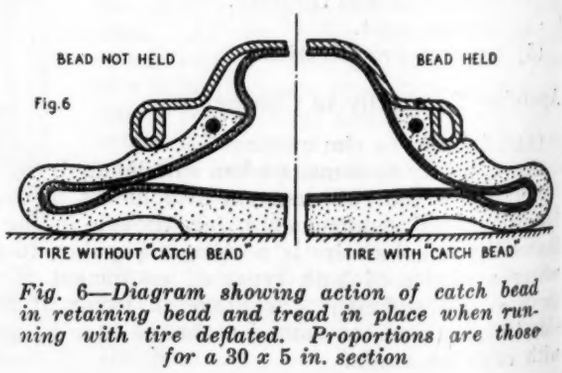


Fig. 6—Diagram showing action of catch bead in retaining bead and tread in place when running with tire deflated. Proportions are those for a 30 x 5 in. section

a tire of same section would be appreciably increased. See Fig. 3. With a narrow rim a small section is necessary to conform to a required tread diameter. See Fig. 4. Therefore, as regards diametral clearance the proposed range causes no trouble, nor does it seriously affect the gearing of the rear axle.

Side clearance troubles arise on existing chassis in some cases, particularly on cars having outside brake bands. In such cases it is a question of rim and brake interference and means an increase in the track of the wheels. Some interference occurs with certain cars in body clearance, but surprisingly little.

Steering in full-lock sometimes brings the drag link into contact with the tire, but this makes only a very few inches reduction in the turning circle.

Weights of the proposed range of tires are approximately the same as those for which they are substituted.

Even a tire of 8-in. section appears quite natural to the eye. Opinions on appearance differ widely, however. Narrow and unflanged fenders make the large-tire sections look somewhat awkward when viewed end on.

Balloon tires are easily put on and taken off without the use of tools and on this score the question of sectional sizes has no bearing.

Relative absorbability, or ability to "swallow" road irregularities without raising wheel, depends upon choice of sectional size, and provided other points, particularly reasonable clearance, are considered, it is desirable to provide the maximum degree of absorbability.

Reference to Fig. 5 shows by comparison the relative absorbability of 5-in. high-pressure tires compared with 8-in. low-pressure tires. It is to be noted that at their working pressures of 25 and 50 lb. per sq. in. respectively the low-pressure tire is 3.2 times as absorbent.

It is not fully realized, perhaps, how much of this increased absorption is due to thinner casings as apart from increased section, but it is known that a well-designed tire is more absorbent than is the case with a poor design.

It is not feasible to reduce the thickness of the casing with a small section as much as can be done with a large low-pressure section.

It was the intention to provide a range of tires which would be sufficiently generous to make it unnecessary for the user to use oversize and thus enable tire equipment to be more definitely anchored.

This matter of sectional size has been referred to at considerable length in an endeavor to demonstrate the

TABLE NO. 1

A = effective radius or distance from center of wheel to ground with tire deformed due to load. B = tire width. E = tire diameter. F = tire radius = ½ E. G = effective height of tire = A + F.

	Low Pressure Tires	A	B	E	F	G	Existing Popular Tires	A	B	E	F	G
For Small Cars	29x4½	14	4¾	29⅝	14¾	28⅞	650x 65BE	12¾	2¾	26⅝	13¼	26⅛
							700x 80BE	13¼	3⅜	27¾	13⅞	27⅛
							26x 3BE	13¼	3⅜	27¾	13⅞	27⅛
							28x 3BE	14¼	3⅜	29¾	14⅞	29⅛
For Light Cars Including Fords	30x5	14½	5¼	30¾	15⅜	29⅞	710x 90BE	13⅝	3⅝	28½	14¼	27⅞
							760x 90BE	14½	3⅝	30¼	15⅛	29⅝
							810x 90BE	15⅝	3⅝	32⅜	16¼	31¾
							28x3½BE	14	3⅝	29¼	14⅝	28⅝
							30x3½BE	15	3⅝	31¼	15⅝	30⅝
							32x3½BE	16	3⅝	33¼	16⅝	32⅝
							26x3½SS	13¼	4	27¾	13⅞	27⅛
							28x3½SS	14¼	4	29¾	14⅞	29⅛
							30x3½SS	15¼	4	31¾	15⅞	31⅛
							32x3½SS	16¼	4	33¾	16⅞	33⅛
For Medium Weight Cars	32x6	15⅜	6¼	32⅞	16½	31⅞	715x105BE	14	4	28⅜	14¾	28¾
							765x105BE	14⅞	4⅛	31¼	15⅝	30½
							815x105BE	15⅞	4⅛	33¼	16⅝	32½
							875x105BE	17⅛	4⅛	35⅝	17¾	34⅞
							31x 4BE	15¼	4	32	16	31¼
							31x 4SS	15⅝	4½	32⅝	16¼	31⅞
							32x 4SS	16⅛	4½	33⅝	16¾	32⅞
							33x 4SS	16⅝	4½	34⅝	17¼	33⅞
							34x 4SS	17⅛	4½	35⅝	17¾	34⅞
For Heavy Passenger Cars	34x7	16⅛	7¼	34⅝	17¼	33⅜	815x120BE	16⅜	4¾	34⅜	17¼	33⅝
							820x120BE	15½	4¾	32⅝	16¼	31⅞
							880x120BE	16¾	4¾	35	17½	34¼
							920x120BE	17½	4¾	36½	18¼	35¾
							32x4½SS	16	5	33½	16¾	32¾
							33x4½SS	16½	5	34½	17¼	33¾
							34x4½SS	17	5	35½	17¾	34¾
For Heaviest Passenger Cars	36x8	17⅛	8¼	37¼	18⅝	35¾	835x135BE	16	5⅜	33⅞	17	33
							895x135BE	16½	5⅜	34⅞	17½	34
							935x135BE	17½	5⅜	36⅞	18½	36
							895x150BE	17⅛	6	36¼	18⅛	35¼
							33x 5SS	16⅝	5⅝	35	17½	34⅛
							35x 5SS	17⅝	5⅝	37	18½	36⅛

effect it has on other parts of the tire and to define reasons for adoption of an all-round increase in section of about 50 per cent.

In respect to method of attachment it is obviously desirable to adopt the inextensible type of bead, therefore a bead of straight-side type is preferable. But in respect to detachment it is desirable to steer clear of the known disadvantages of the straight-side type of detachable rim. Therefore advantage can be taken of the wide spacing of the beads to adopt the well-known drop base bicycle type rim that is so popular in Europe. This is a simple and non-experimental feature which has survived all tests and which was used extensively for airplane tires in the latter years of the war.

So far as safety feature in case of deflation and blowout is concerned, it is realized that the simple drop base rim does not give a sufficiently positive method of attachment, for in this case the beads might not drop into the base of the rim and the tire might come off the rim unintentionally.

An effective means of retaining the tire in place when running deflated is a "catch" bead, on which the casing of the tire rests when deflated. The resultant load on this catch bead locks the shoe in place, effectively preventing the shoe from being displaced. Fig. 6 shows a section of a deflated tire with and without the catch bead.

Adoption of the catch bead provides a cushioning feature which makes a real bed for the casing and allows it, as well as the tube, to be sandwiched between two cushioning mediums, the tread and the catch bead, as shown in Fig. 6. In practice also the grip obtained by this catch bead attachment has been found to prevent creeping of a deflated tire, and this, in turn, prevents pulling out of the tube valve.

Reducing Number of Valve Types

Tire manufacturers have always had to stock tubes with different lengths of valves. The valve for a wood wheel must be long, for a wood demountable still longer, while for a wire wheel it must be short. With disk wheels an angle valve must often be used. These facts have involved carrying expensive stocks and have increased wheel cost. They have meant, also, difficulty in attachment and inflation of the tire.

The range of tires and rims proposed takes advantage of the drop base rim feature to make all tubes with valves set at an angle, at the same time overcoming difficulties due to varying valve lengths. Furthermore, it overcomes the trouble sometimes brought about by the interference due to disk wheels and center point steering and front-wheel brakes in combination.

It is difficult to see how, with low-pressure tires, the requirements of the car designer in reference to front wheel brakes can be met fully by means other than the use of the well base rim and a valve set at an angle. A virtue has been made out of necessity in this case.

It should be pointed out that this proposed range of tires is put forward after dealing with the low-pressure tire problem on a broad basis. It was realized that, having of necessity to use non-standard wheels, it was desirable to see that no considerations, such as having to use existing rim contours or widths, should be allowed to prevent the attainment of the ideal tire.

Certain objections have been cited against low-pressure tires, these being principally: bouncing without shock absorbers, shimmying, centrifugal distortion at speed, and instability or rolling. It would appear that such troubles arise principally due to the narrowness of the rims used in some cases. There appears to be no good reason for adopting narrow rims other than the cry for weight reduction and the inability to get experimental wide rims of light weight.

Standard Proposals Summarized

Further troubles cited are muddiness and dust raising. They are largely a question of tread design. A tread which is not too wide and is properly designed gives little trouble in these respects.

Low-pressure tires are said also to be very liable to damage when run deflated. This is logical when the thin cases and big sections are considered, but the proposed range and rim and bead type overcomes this trouble.

Summarizing the proposed standard range as regards various points the claims made for same are briefly as follows:

(1) It is a real low-pressure range which, while giving a large increase in section, does not go so far as to hinder its adoption on new cars and in most cases makes conversion work on old cars easy.
(2) Cost of such tires need not be any greater than that of normal tires.
(3) The faults inherent in standard high-pressure tires, namely, difficulty of fitting, complexity of rim, water damage, high rim weight, inability to stand abuse and valve complication and interference, are overcome.
(4) The range of five tires submitted fills the bill in regard to diameter.
(5) Oversizing can be carried out satisfactorily.
(6) Tire and wheel manufacture will be simplified and there will be no interference with front-wheel brakes or center point steering.
(7) No excessive bouncing or shimmying takes place when shock absorbers are not used.

In effect, these low-pressure tire proposals are put forward for adoption as standards in the belief that they embody departures from standard high-pressure tire practice, which experience has shown us to be requisite and feasible when using the large-section low-pressure tire, though they were not feasible when using high-pressure tires.

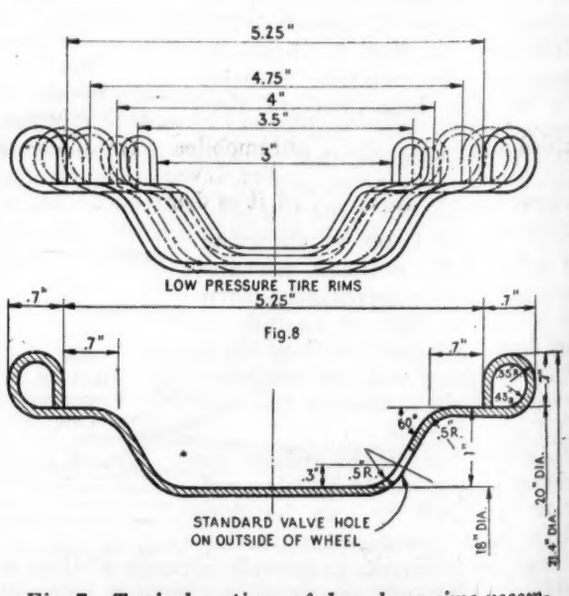


Fig. 7—Typical sections of drop base rims recommended by author as standard for balloon tires

America to Take World Leadership in Dirigible Development

Impending purchase of Zeppelin rights and patents by Goodyear company expected to result in manufacture on large scale. Ample capital evidently assured.

ONE of the most far-reaching developments in American aviation is found in the formal announcement that the Goodyear Tire & Rubber Co., after months of negotiation, has taken over from the Zeppelin Co., which gave Germany world supremacy in lighter-than-air craft, exclusive patent rights for the United States and Canada. Patent rights in other countries are not covered by the transaction.

The new company will be managed and controlled by Goodyear, and the Zeppelin interest will receive minority stock holdings in a new company which will be organized as a Goodyear subsidiary. No cash payment has been made by Goodyear to Zeppelin and no cash consideration is involved in the acquisition of patent rights. The transaction includes also the services of the Zeppelin technical staff. The Zeppelins' sole compensation will be an equitable share in the results of the business.

The Goodyear company has long been the leading producer in this country of lighter-than-air craft and the principal source from which the Government obtained its non-rigid and semi-rigid ships. A thoroughly balanced and experienced technical staff will be at work at Akron within sixty days to cooperate with anyone who desires to undertake definite construction projects.

The American-built ZR1, now the Shenandoah, and the German-built ZR3 will be sister ships. The successful tests of the ZR1 make it highly probable that these two huge aircraft will form merely the nucleus of an air fleet which will be operated jointly by the army and navy.

Interest in Goodyear Program

Keen interest has been displayed by the automotive industry in the program of the Goodyear interests for the development of aviation because aircraft of all kinds, operated as they are by internal combustion engines, are regarded as step-sisters of automobiles. The industry has played an important part in the development of aviation and there are indications that it is destined to play a still larger part. When motor vehicles pass out of the foreground of the picture and airways supplant highways, the men who are now building automobiles probably will be found playing a prominent part in the development of another new phase of transportation.

Acquisition by Goodyear of the Zeppelin rights comes as the climax of two years of persistent negotiation by German aircraft interests with American capital. Aircraft manufacturers have had some inkling of what was likely to happen but they have not been familiar with details.

The American Investigation Corp. was organized in August, 1921, to investigate the practicability of establishing in this country a commercial dirigible air service. This report was satisfactory and indicated that such a service might be conducted with a reasonable hope of profit once it was well under way.

This company was headed by Benedict Crowell, former Assistant Secretary of War, who led the American aviation mission to Europe. Associated with him were Owen D. Young, vice-president of the General Electric Co.; L. V. Benet, president of the Hotchkiss Co.; Marshall Field, III.; Snowden A. Fahnestock, E. M. Herr, president of the Westinghouse Co.; Samuel McRoberts, R. B. Mellon of the Mellon National Bank of Pittsburgh, Theodore Pratt of the Standard Oil Co., Col. Franklin D. Roosevelt, Benjamin Thaw of Pittsburgh and David Goodrich of New York.

Schuette's Activities

In February, 1922, the General Air Service was incorporated in Maryland as the successor of the American Investigation Corp., with a capital of $50,000,000, and announcement was made a month later by Dr. Johann Schuette of the Schuette-Lanz Airship Co. of Germany that he had assigned to it the manufacturer's rights and patent interest of the Schuette-Lanz airships for the entire world. It was stated that the company intended to start service with two large passenger and express carrying airships between New York and Chicago.

Since that time no public announcements have been made of this company's plans, and it has developed that the interests on which an option was given by Dr. Schuette would have constituted more or less of a gold brick. He formerly was connected with the Zeppelin company and left that organization during the world war at the behest of the German Government to form a second source of supply for ships of the Zeppelin type. He is understood to have claimed ownership to certain patents involved in Zeppelin manufacture which were the sources of litigation between the two German companies following the war. Apparently the American company learned of these conditions and never exercised its option.

Efforts to Sell Zeppelin Rights

About the same time that Schuette was making his announcements several representatives of the Zeppelin company came to America and made an effort to sell that company's patent rights in this country because the Versailles Treaty provides that the Zeppelin plants in Germany must be razed upon the completion of the ZR3 for the American Government. Harry Vissering of Chicago was appointed the American representative of the Zeppelins, and it was he who conducted the preliminary negotiations with the Goodyear company.

In connection with the Goodyear enterprise much significance is seen in the fact that Owen D. Young, one of the promoters of the American Investigation Corp., is one of the three men who was given control of the management of the Goodyear company during the life of the first sinking fund gold bonds authorized at the time of its reor-

ganization early in 1921. His associates in this connection were Clarence Dillon of Dillon, Read & Co., and John Sherwin of Cleveland. It is generally assumed that with Young's common interest in the development of dirigibles and in the success of the Goodyear company, he would not retain an interest in a rival airship concern.

Another significant fact in connection with the Goodyear purchase is the announcement that Leonard Kennedy & Co., which also was connected in an important banking capacity with the reorganization of the Goodyear company, has acquired a substantial interest in the common and preferred stocks of the Curtiss Aeroplane & Motor Co. through the purchase of one-half of the holdings of C. M. Keys. This is taken to presage a close contact between the Goodyear and Curtiss interests. It is considered likely that it will place the experience and facilities of the Curtiss company at the service of Goodyear interests in connection with aircraft manufacturing work.

Friction Eliminated

It also may be accepted as certain that arrangements have been made which will prevent any friction as the result of Dr. Schuette's claims to certain of the Zeppelin patents.

Negotiations with the Zeppelins are understood to have been practically completed upon a recent visit to Friedrichshafen by Edward G. Wilmer, chairman of the board of the Goodyear company, and P. W. Litchfield, vice-president.

It is considered probable that many of the key men in the Zeppelin organization will be brought to this country to establish the Zeppelin enterprise. Manufacture probably will be undertaken at the Wingfoot Lake Aviation Station near Akron, and it is expected that much of the material employed will be manufactured in the Goodyear plants. The Goodyear company played an important part in the construction of the ZR1, its laboratories expending much time and money in the development and tests of the various materials used.

Much the same can be said of the Aluminum Manufactures, Inc., which spent large sums in the development of aluminum alloys used largely in the frame construction of the Navy's dirigible. The Packard Motor Car Co., as well as other automotive manufacturers, was responsible for the design and construction of other important parts of the ZR1.

No information is available as to the sum involved in the purchase of the Zeppelin rights, but it is evident that abundant capital will be available for the development of dirigibles in this country. The Goodyear company undoubtedly has a very definite idea of where it is going and the probable size of its market. Construction work will provide another outlet for materials made in its tire plants.

Provision for Military Needs

Aviation experts believe that most of the dirigible construction in this country in the near future will be for the Army and Navy. It is understood unofficially that both these departments of the Government have a very clear understanding with the Goodyear company and that they will be given free access to the Zeppelin patents it will control, although actual construction work is likely to be done by Goodyear.

There also is believed to be a genuine field in this country for the ultimate use of dirigibles for commercial purposes both for transcontinental and transatlantic transportation of passengers and light freight.

All departments of the Government are much interested in the manufacture in this country of rigid lighter-than-air craft and it is known that they have done everything possible to facilitate the negotiations between the Goodyear and Zeppelin interests. It has been announced at the White House that President Coolidge regards the purchase of the Zeppelin rights as an important step in the promotion of air transportation in the United States.

One of the important limiting factors in the promotion of dirigible service will be the adequacy of the helium supply. All present sources of supply are understood to be controlled by the Army under contract or otherwise. Enough will be available for all ships projected for military purposes and it is believed that the supply will be so expanded that there will be enough remaining for a considerable number of commercial craft.

Safety demands the use of helium, which is non-inflammable, as a substitute for hydrogen, the inflammability of which has resulted in tragic disasters to dirigibles in this and other countries. This is the only country supplied with helium in sufficient quantities to make its extraction economical.

Zeppelins are essentially long distance craft and they are not economical for operation over distances of less than 500 to 700 miles. The world is familiar with the spectacular flights made by German ships of this type during the war. The Navy has projected a flight over the North Pole for the ZR1 and the Army may attempt to fly the ZR3, which is nearing completion in the Zeppelin works at Friedrichshafen, not only across the Atlantic but direct to San Francisco, a distance of approximately 6000 miles.

Accommodations for 100 Passengers

It will be easy to construct dirigibles which will provide accommodations for 100 passengers in addition to thirty tons of mail and express. Use of these craft has been considered seriously as a means of cutting down the time required for the transportation of passengers and highly valuable freight between this country and South America.

Whatever may be the plans the Goodyear company has in mind, they undoubtedly will make the United States the leader of the world in the development of dirigible aviation. Its purchase of the Zeppelin interests may be considered the logical result of the long and important experiments in the construction of smaller lighter-than-air craft for the Army and Navy.

A BELGIAN transformable car is described in a report to the Department of Commerce by Philip E. McKenny of the Commercial Attache's office in The Hague:

The limousine inclosure is composed of four large glass panels. The two which divide the driver from the passenger are hinged to the forward side panels of glass in such a way that they can be turned back on these side panels, after which the two now double glasses on each side can be dropped into the side of the body. The rear quarter glass panels are hinged onto the very heavy back curtain and can be turned back on this until they lie flat against the back of the car.

The lower rear section of the tonneau is so arranged that it can be opened downward on hinges and the combined back curtain and rear side glasses, folded back on the curtain, are turned down into the receptacle thus provided by means of hinges on the lower edge. The receptacle is then closed and the car is an open phaeton with a roof, with a top which can be folded back like any phaeton top.

It is possible also to fold back the top only and put away the rear side glasses and back curtain, leaving the glasses between the driver and passenger and the front side glasses up, as windshields.

Popularity of Lightweights Apparent at British Motorcycle Show

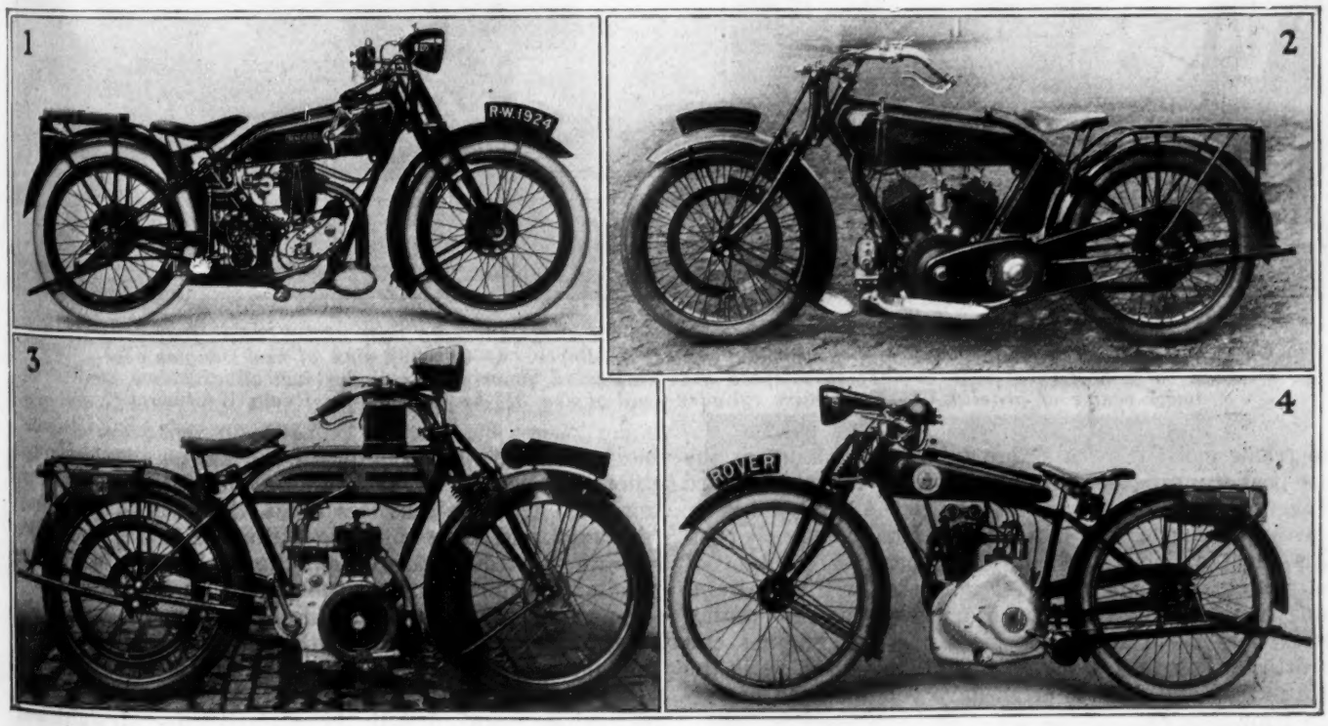
Wider use of overhead valve engines, expanding brakes, and circulating splash lubrication. Wiseman exhibits new frame design of duplex type. Various construction changes have been made with a view to lower production costs. Prices are lower.

THE Motorcycle Show, which opened at Olympia, London, on Oct. 15, has brought no revolutionary developments, with the possible exception of an unconventional frame design to be referred to later, but certain trends in design of which there were evidences last year, are now more pronounced. The most prominent of these tendencies are the use of internal expanding shoe brakes—usually referred to as the car type in motorcycle circles—circulating splash engine lubrication in place of the hand feed and semi-automatic arrangements, and unit construction for engine and gearset. In regard to the latter some makers have adopted half measures by bolting a separate gearset to the crankcase, instead of mounting it separately on the frame. The reason for this is the wide use of stock engines and gearsets, made by firms which specialize in one or the other, but never in both. A genuine unit construction, therefore, calls for its production by the motor cycle manufacturer, and not more than a dozen British firms make both engines and transmissions for their own machines.

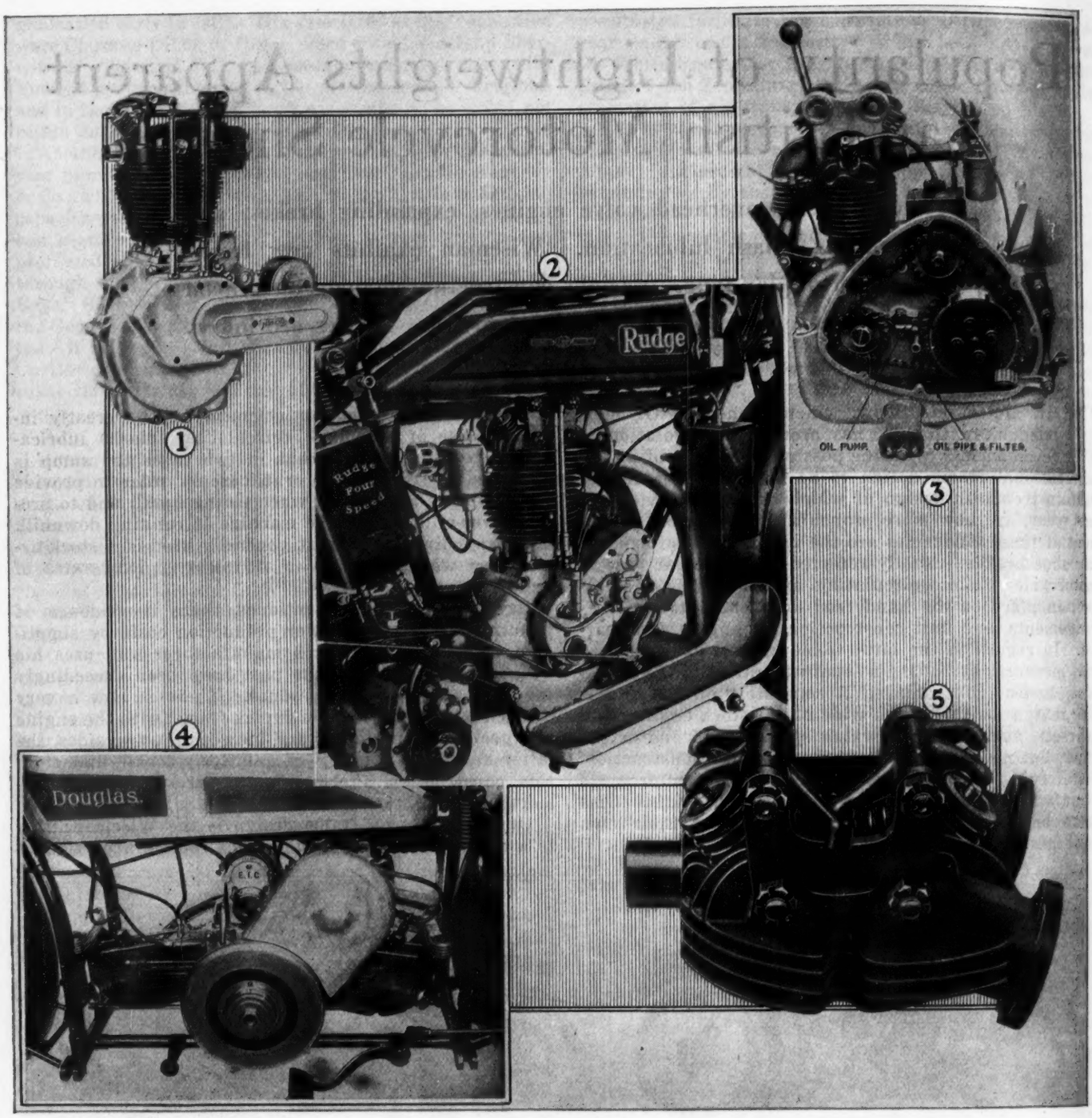
There is little need for comment on the greatly increased use of automatic (circulating splash) lubrication except to mention that in two cases the sump is arranged in front of the crankcase in order to provide more copious lubrication when riding uphill and to prevent over-oiling when the machine is running downhill. The expanding brake most generally used is a stock article and was illustrated in AUTOMOTIVE INDUSTRIES of Jan. 4 last.

Beyond the trends mentioned there is evidence of genuine endeavors to lower production costs by simplifying frame design. Each manufacturer still uses his own designs, which in the past have been exceedingly involved and costly to produce. There is now a very decided leaning toward the duplex frame, with the engine and gearset supported by and between the two sides, the latter formed of tubing of relatively small diameter; this construction affords greater lateral rigidity, besides being lighter.

One notable new frame design is the Wiseman; this is a duplex type, and each half of the main portion of



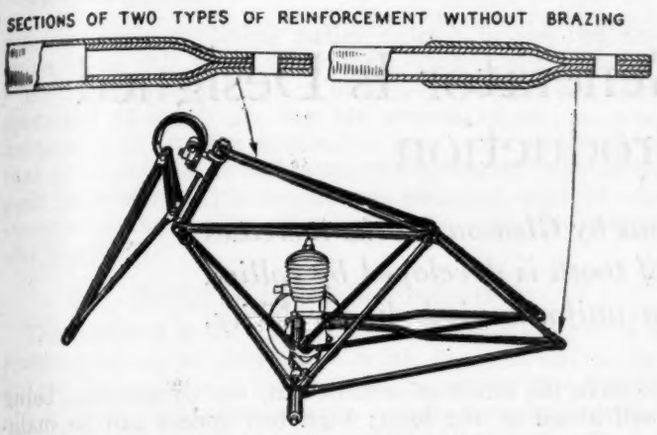
1—New four-valve, four-speed 3½-hp. Rudge-Whitworth. 2—New twin-cylinder Raleigh. Note outside flywheel. 3—3½-hp. unit-powerplant Triumph. Has spur drive from crankshaft to primary gearshaft. Price with electric lighting, £55. 4—2 1/3-hp. overhead-valve Rover. Short lever outside transmission casing controls delivery of oil pump of circulating splash system



1—New overhead valve Norton single-cylinder engine of 4 hp. 2—Close-up view of 3 1/3-hp., four-valve Rudge-Whitworth engine. 3—Unit powerplant of 2½-hp. Rover. 4—Close-up view of new Douglas overhead valve horizontal twin engine; three-speed gearset located above rear cylinder instead of below, to lower center of gravity. 5—Four-valve cylinder head of new 3½-hp. and 4½-hp. Rudge-Whitworth

the frame consists of a single tube commencing at the seat post, running down to the bottom bracket, forward to carry the engine and gearset, up to the head and after a sweeping curve, back in a straight line to the seat post. This construction gives a low seat position, but one of the principal claims made for it is that without alterations in the frame itself by the use of special cradles, almost any make and many sizes of stock engines can be fitted. This is a point of advantage where, as is the case in England, buyers often have very decided preferences for this, that or the other make of engine.

From a production standpoint the frame of a new model lightweight, made by a comparatively small firm, the Francis-Barnett, stands out prominently. There is no brazed or welded joint in the frame itself, though there is one in the rear stand. The frame consists of eighteen separate seamless tubes, the ends of which are flattened and have holes jig-drilled in them; the tubes are of ⅝-in. diameter, except the back stays, which are ¾ in. Short reinforcing tubes 3 in. in length are telescoped either inside or outside the main unit before the latter is flattened; the strengthening tube is a tight push-fit, and the reinforced tubes are heated and flattened without treatment. Some of these frame units are curved or cranked, but the majority are straight and assembled with steel rods or distance pieces at some points, to provide a construction triangulated in every direction. Front forks and rear stays are similarly built



Francis Barnett built-up frame without brazed joints. Eighteen separate tubes of ⅝ in. and ¾ in. diameter

up, the axles, seat bolt and head bolts serving as distance pieces.

This frame design at present is applied only to the ultra-lightweight machine which has been taken up as an additional model by a great many firms. As a class it has an engine with a cubic capacity not exceeding 10.7 cu. in. (termed 1¾ hp. on the basis of 1 hp. per 100 c.c.); many examples have engines of less than 9.2 cu. in. This class of machine is attracting considerable attention and appears likely to appeal to very large numbers of people who, prior to its introduction, could not afford to buy or run a motorcycle of any kind. It is not a motorized cycle, but is designed for motor propulsion throughout. In its cheapest forms it has a direct belt drive, though it is then obviously suitable only for use in flat or merely undulating districts. As exemplified by the Francis Barnett (which won first place in a competition organized by the Auto Cycle Union for ultra-lightweights) it has an engine of 1¾ hp., two-speed gearset, chain and belt drive. Thus equipped it sells at £27.

The lightweight type with an engine of from 2¼ to 2¾ hp. is as popular as ever, and despite its having been viewed with skepticism even for solo mounts as recently as two or three years back, many makers are now offering it for use with light sidecars. This type is fitted with both two-cycle and four-cycle engines.

3½-hp. Machines Popular

Of all types of British motor cycles the 3½ hp. continues to hold the most prominent position, both in the favor of the public and in the number of makers who include it among their range. It is in this class of machine where most of the new developments are to be found. Unit construction and mechanical lubrication have been mentioned; another is the greatly increased number of machines with overhead valves, most of these having pushrod operation, though one new model (Matchless) has an overhead camshaft. Rudge, one of the best-known makers, has come out with two new models differing widely from his previous practice. They have four overhead valves per cylinder, mechanical lubrication and four-speed gearsets. Triumphs, who have the biggest British output, are continuing their four-valve model and have put into production the unit construction machine that was tentatively introduced a year ago. This has a spur drive from crankshaft to primary gear shaft, whereas the Rover unit power-plant machine (another prominent make) has a triangulated chain which serves as the means of transmission from engine to gearset and also for the magneto drive.

There is no change to record in the relative popularity of two-cycle and four-cycle engines; it is to be noted, however, that many more exhibitors than last year are showing machines with the Bradshaw oil-cooled engine, though in practically every case it is merely one of two or more optional types of engine available for the machine to which it is fitted.

Concerning minor trends, four-speed gearsets represent one that is developing, though the three-speed is still the standard for machines of 3½ hp. and over, and for some of those of smaller size. Very slowly, too, complete equipments are being included in the catalog price, though electric lighting is an extra in all but half a dozen cases. Where this last feature is provided, either inclusive or as an extra, the generator is nearly always combined with the magneto; there are several lighting and ignition machines available. One, having a single rotating member serving to generate current for both purposes, is used mainly for the small models. For 3½ hp. and upward, a combined machine with two intergeared armatures is more usual.

A few attempts are in evidence to inclose the engine, gearset, control rods, etc., by means of side shields open at the front and rear, but no well-known maker exhibits an attempt to screen anything. There are a great many more "open frame" machines for women's use. The number of women riders increases perceptibly each year, and in the Auto Cycle Union's Six Days' Trial in August there were three women competitors who completed the course and the subsequent speed trials.

The show is fairly international in character, for though 90 per cent of the exhibits are British, there are five American makes (Indian, Henderson, Harley-Davidson, Ace and the "X"), one Italian (Bianchi), one Belgian (F. N.) and three French (Peugeot, Clement and Alcyon), all the latter showing ultra-lightweight machines, the Clement having an engine of ½ hp., making it the lowest powered machine on view.

Prices show considerable reductions in all sizes, the average "cut" being approximately 15 per cent.

Smith Expanded Metal Wheels for Passenger Cars

AN all metal wheel with only six spokes is being made for passenger cars by Smith Wheel, Inc. The wheels are cast from a special composition and are then expanded to a larger size than the mold, by a patented process. They are claimed to be as light as or lighter than wood wheels which they replace, to be easily kept clean, to be much stronger than wood wheels and to be attractive in appearance. The wheels, of course, are made in a single piece, they are hollow throughout and are provided with numerous internal braces in the hub and felloe.

Straight Bevel Gear Generator Is Designed for Mass Production

Single purpose machine brought out by Gleason Works increases speed of manufacture. Contour of tooth is developed by rolling the work and tools together at a uniform pitch line velocity.

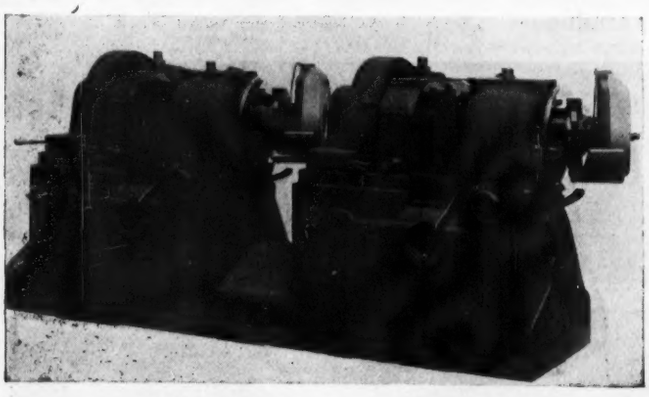
A NEW design of bevel gear generator has been brought out by the Gleason Works, the machine being designed to produce bevel gears at a more rapid rate than has been possible heretofore. It is a single purpose machine, and, as may be seen from the photograph, which shows two of these machines joined end to end in battery formation, it is a radical departure from the well-known Gleason gear generator of the universal type, as far as outside form is concerned. However, the same basic principle of generating the tooth is retained. The tooth contour is developed by rolling the work and the tools together at a uniform pitch line velocity. The tools represent the adjacent teeth of a crown gear and, as they reciprocate, cut away the stock on the work and so develop correct tooth profiles.

The generating motion is obtained by means of a crown gear and segment, the generating roll being entirely on the work holding member. This arrangement has been developed into a simple and rigid form of design, which is claimed to be very accurate because of the few parts and fits involved. The index is of the notched plate type and is operated by the generating roll. The index plates are hardened and ground.

The tool-carrying unit is mounted on an upright, which, instead of swinging about a center, is given a lateral movement by a cam to obtain the feed of the tools to the work. This permits the whole unit to be securely gibbed with simple adjustments for taking up the wear.

The clapper box is integral with the slide, and the tool holder and clapper block are made of steel, the tool holder being hardened and ground. The relief movement for the tools during the return stroke is effected mechanically and is positive.

The amount of movement necessary for the relief of the tools is exceedingly small, because the swivel pins on which the clapper blocks swing are behind the cutting edges of the tools and almost in line with their travel. This small movement makes the machine quiet and steady in operation and, as the drive for the tools is arranged to have the effect of a draw cut, the connections being well ahead of the tools; high tool speeds can be maintained practically without vibration or noise and the work produced has a smooth finish.



Battery of two Gleason straight bevel gear generators

The tool-carrying slides are arranged to overrun the arms at both ends, so that a long run on any one job will not wear a depression in the bearing surfaces of either part. One large gib on each slide takes up the wear for all directions. The tools used are the same as those used on the 11-in. and 18-in. in Gleason generators.

Lubrication System

Every point on the machine requiring lubrication is flood-lubricated by a pump circulating system. There are two points for inspecting the oil flow, and these are within sight of the operator at all times. While some prominent machine tool builders have used flood oiling for some years, the Gleason Works believe this to be the first time that every point requiring lubrication is supplied by one system.

On this machine, besides all rotating bearings, the tool slides and all hand adjustments are taken care of by the central oiling system and even such points as the notches in the index plates and the friction surfaces on ratchet pawls are thoroughly oiled.

The advantage of having only one place to oil is quite apparent, as it obviates the necessity for shutting down the machine for oiling up in the usual way and eliminates the depreciation due tc failure of the operator to regularly lubricate some vital point.

Chips are removed and both lubricating oil and cutting compound are replenished without stopping the machine or causing the operator any delay. The chips drop into a basket swiveled on trunnions. When full, this basket is tipped and the chips fall into a second basket at a lower level and remain until the service man removes them, which is done by lifting out the basket complete and dumping.

The machine is started by means of a lever and the control is sensitive. If necessary, the tools can be "inched" along very small distances. When the machine reaches the correct position for reloading, an automatic stop operates to shut it down by throwing off the disk friction clutch. Repair work or replacement of parts on any portion of these machines when set up in a battery, can be made without moving the machine.

The machine, shown in the photograph, is arranged for motor drive, the motor being located at the back and belt-connected to the main drive pulley. A 3-hp. motor is required. The main driving pulley has a very heavy rim and, running continuously, is in effect a flywheel. The power is transmitted to the main shaft of the machine by a disk friction clutch. When the automatic stop releases this friction clutch, the pulley runs free, and it stops without appreciable coast, as there is but slight momentum in the machine. In starting, too, no time is lost in getting under way, as the momentum in

the constantly revolving pulley quickly brings the machine up to full speed after the clutch is engaged.

We are informed that one of these machines has been operating 24 hours per day for several months on production work and the production was twice as great as that previously obtained with the universal type bevel gear generator. This output was obtained without any sacrifice in the quality of the work; in fact, the quality was improved.

Designed for Mass Production

The machine is designed for mass production and is a single purpose machine. The work head, designed for differential gears and pinions, can be arranged to handle any of these parts having a pitch angle included between 29 and 61 deg. Each gear or pinion will require a crown gear and segment corresponding to its pitch angle and an index plate for the correct number of teeth. For greater pitch angles than the upper limit given above, a separate complete work head is needed, and the same is true in respect to pinions of a lesser angle. In both these cases a variety of gears or pinions can be cut if proper segments, crown gears or index plates are provided.

The machine is of compact design, the floor space of the belt-driven equipment being 4 ft. 6 in. x 3 ft. 8 in. The smaller dimension is slightly increased when the machine is motor driven, the exact amount depending on the motor used. When arranged in battery formation, a spacer is used to join the machines together if the pitch angle of the gear to be cut is greater than 35 deg.

The machine can be arranged to cut gears falling within the following specifications: greatest cone distance 4½ in., least cone distance 2 in., greatest pitch angle 75 deg. 58 min., least pitch angle 14 deg. 2 min., extreme ratio for right angle bevels 4 to 1; largest gear of 4 to 1 ratio, 8¾ in.; largest gear of 2 to 1 ratio, 8 in.; largest gear of 1 to 1 ratio, 6¾ in.; largest diametral pitch, 4 dp.; longest face, 1¼ in.; time for generating one tooth, 4 to 30 sec.

Only one cutter speed is available on any one machine, but this can be anything between 300 and 500 strokes per minute.

Swan Manifold Has Quadrilateral Section and Sharp Turns

A MANIFOLD adaptable to any motor and designed to give equal distribution of mixture has been brought out by the Swan Carbureter Co. It is claimed to be lower in production cost than the average manifold, because of its relatively simple design.

The new manifold has been adopted for the 1924 Buick and is being experimented with by other manufacturers. Instead of being laid out with easy bends, in accordance with the usual practice, it is made with abrupt turns. It is of square or rectangular section and, therefore, has a flat floor. The manifold is so designed that the paths for the fuel mixture to all cylinders are similar. In the case of a six-cylinder engine, for instance, each cylinder draws its charge from a central chamber through a passage which has the same characteristics as the passages to the other five cylinders. No two cylinders draw through the same distributing branch at the same time. It is claimed for the manifold that it enhances the advantages of three-port type six-cylinder engines, which type of engine is less costly to build but, heretofore, has been difficult to "carburate."

The use of a rectangular section and of abrupt turns are intended to keep the small particles or drops of gasoline at all times in the air stream and to direct them in straight lines. Where changes in direction are necessary, they are made abrupt, so that the maximum swirling or turbulence is produced, tending to keep the drops of fuel in suspension and after the turn is passed the flow is again in a straight line.

A square or rectangular section is used because this shape provides the greatest bottom or floor area for the evaporation of fuel and also because all drainage from the top or ceiling of the manifold must fall into the air stream. The distributing portion of the manifold is horizontal and free from depressions or pockets.

Another point which has been recognized is that the temperature of the air changes with a change in pressure, and at close throttling of the carbureter the pressure in the manifold may be as low as 10 lb. below atmospheric. Furthermore, vaporization of the fuel has a cooling effect and at times the temperature in the manifold will go below the freezing point. Since all air contains water vapor in varying amounts, this decrease in temperature tends to cause the water vapor to deposit on the inside of the manifold as frost. To counteract this tendency in the Swann system of manifolding, sufficient heat is added to keep the water in vapor form.

Fig. 1 shows the Swan manifold fitted to a six-cylinder engine with three inlet ports and Fig. 2 shows two projections and one sectional view of a similar manifold.

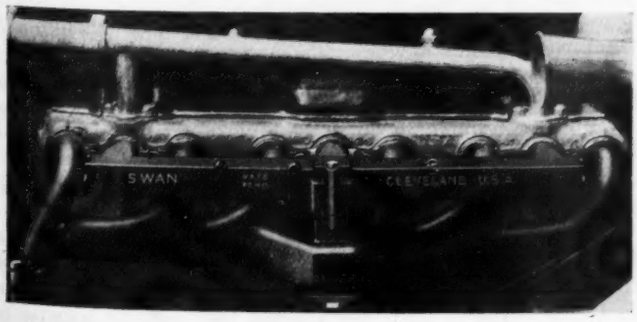


Fig. 1—Swan manifold on Buick six engine

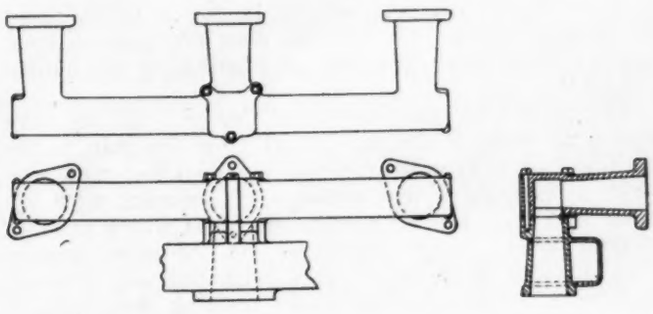


Fig. 2—Outline and sectional views of Swan manifold

Human Element Difficult to Satisfy in Modern Factory

Automatic production gives worker more time to think—and he does

By Harry Tipper

THE need for individual skill on the part of workmen has been decreased constantly for a number of years, John Carter tells his fellow executives of the Planet Motor Car Co. Education and distribution of ideas has grown, however, during the same period, thus making it more difficult than ever to satisfy the desire for mental activity and interest natural to human beings.

"THE contrasts in ideas expressed at a convention always interest me," said John Carter, vice-president and production manager of the Planet Motor Car Company, as the round table group settled down to lunch. "I was over to the production meeting of the S. A. E. at Cleveland and I noticed that when we talked about machinery we still used the phrase 'eliminating the human element,' whereas when we talked about management or operation the human element seemed to be the whole thing."

"Which means what, John?" asked President Billings.

"Well, for one thing, it means that our words are not used properly when we come to talk about the man and, probably, we are no clearer in our thinking than we are in our expressions," replied Carter.

"But we have eliminated the human element from a lot of our work, haven't we?" asked Henry Jones, the advertising manager, who was suspected at times of Socialistic leanings. "You know that's one of the complaints made by some of the so-called radicals. They say we have eliminated so much, that the job is not sufficiently interesting nowadays and that's one reason for the present inefficiency, lack of enthusiasm or desire for work."

Need for Human Skill Decreased

"If we had eliminated the human element, there would be no human problems," Carter replied. "Sometimes I wish we had, because we could make some reasonable future calculations then.

"The trouble lies in the fact that our human problems are more severe than they were and they are less tangible than they used to be when the job depended more upon human skill."

"I am afraid you let yourself in for it there," said President Billings. "If the job does not depend upon human skill so much, then we are eliminating the human element."

"Oh! no, we are not," answered Carter. "All we have done is to transfer the active skill from the man to the machine. It is true we can take an unskilled man who could never acquire that measure of accuracy with his hands and train him to operate machines which produce accurate work. That's where we get the mass production. Instead of spending years producing one accurate craftsman, we spend a few weeks training thousands of machine operators. We eliminate the necessity for human skill, but that does not eliminate the human element. It simply makes the problem of satisfying the man more difficult.

"You see, it is impossible to stop a man from thinking. When his every faculty was occupied entirely with the job of making something, other thoughts were absent. He thought about his work, practiced it and developed it. Moreover, he enjoyed it, just as every human being enjoys something which takes all his attention.

"I suspect that golf is interesting because you have to put your mind on it to make any success of it.

"Nowadays, in our shop there are a lot of people who do not need to be thinking about the job all the time. Take the man who is handling a group of automatics. He must do certain things at certain times and they keep him reasonably busy; but a lot of that work does not require his thoughts. It becomes semi-automatic itself.

Thoughts Wander

"He has time to think about other things. He can mull over his grievances. He can spend a lot of time thinking about that stuff on the oppression of capital he heard at a meeting. He can think of the impressive phrases the soap-box orator used when he stopped casually to listen. He has plenty of time to remind himself of that nasty habit of the foreman when there is anything wrong and he can also figure out that he would like to see that ball game this afternoon, and so forth.

"Between times, throughout the day, he has a lot of opportunity to think, and he does it. He may be ignorant, but that doesn't prevent him from thinking. He may be all wrong, but that doesn't stop him from having his opinions. He may be dumb, but he can be impressed by a good speaker of his own kind and led in his thoughts by what the speaker says.

"I don't believe any man's opinions are less firm because he doesn't know the subject.

"You don't have to do much investigating to prove the fact, either. Every one of us spends a lot of time each day airing our views on subjects concerning which we really know very little."

"That's considerable of a speech, John," said President Billings, "and it opens up some angles on this labor situation I had not thought about before. I can testify to the fact that a man's opinions are not less definite because he is ignorant of the subject. Just before you came in, Jim,

here, was giving us a talk about the railroads in which he offered several opinions on how to run the transportation system of the United States and I don't know that I would credit him with any real information on the subject. He had considerable difficulty this morning locating a carload of apples from his farm and he certainly was revising his opinion of the railroad downward.

"I begin to get some interesting light on this automatic operator of yours, John. Maybe this morning it is raining cats and dogs—miserable day—there aren't any street cars for ten minutes and he just loses one. He is wet, cold and mad—gets to the shop late, which makes him madder.

"All through the day he keeps thinking about it; he has plenty of time, mentally, to do so. In the evening paper he reads that the car company took in $100,000,000 in nickels last year.

"Fine stuff for stable work in our business, John."

"Any man ought to have sense enough to keep him from being misled by that set of circumstances," Frank Lane broke in. "The trouble is those men are mostly foreigners and ignorant."

"That may be," said President Billings, "although it is unwise to judge intelligence in that way when you don't know much about it. In any case, this automatic operator is thinking and lots of his thinking is detrimental to our good relations with him. What are we doing about it? What can we do about it?"

Detailed Contacts

"We have always done something in connection with the problem, Lloyd, as you know," said John Carter, "but I have been getting to the conclusion lately that a lot of our efforts aren't getting anywhere and I've been trying to find out why.

"Our shop committees and our methods of payment have done a lot of good; some of our educational work has helped, but we are not making progress rapidly enough.

"I've about come to the conclusion that we must revise our detail contact. For instance, I picked up the other day an article by the president of the Bridgeport Brass Company which I had put aside to study. He told how they conveyed the idea of the expenses, functions and profits to the shop committee men and foremen through the plant. Figuring that most workers in the metal trades are used to form and color, they illustrated proportions of costs, earnings, wages and living costs by means of colored blocks of definite scales. They used the same method of showing the cost analysis in the factory and in visualizing the relation of the factory job to the actual organization job.

Simplifying Education

"I got some ideas from this which I expect to put into practice. My feeling is that as the men have a good deal of time to think about things, I want to give them something to think about which will give them a better understanding of the business.

"The difficulty has been to find ways of explaining things in an interesting way so that the men would be impressed with them. I like the little story this Bridgeport man gives from his experience. He says that the morning after one of these meetings, one of the men came in late and explained his tardiness by stating that some months previously an unfavorable comment about the company was made to him which he couldn't answer, not knowing anything about the matter. It so happened that the very point which troubled him was fully discussed at the meeting, and from his own language the reaction of a better understanding may be best realized. He said, 'I couldn't come to work this morning until I hunted up that fellow to tell him he was a damned liar.'

"That's the way I want my men to feel and I must find ways and means to do it."

"That's a great idea, John, and I believe is one of the biggest jobs of factory management. Go to it," said President Billings, as they rose from the lunch table to resume their work.

New Text Book Treats Details of Internal Combustion Engines

WHEN internal combustion engines first came into practical use, coal gas was almost the only fuel available, and even today "gas engine" is used as a synonym for internal combustion engine. There is now, however, quite a range of different fuels being burned in these engines. Natural gas, producer gas, coke oven gas and blast furnace gas are given as the more common gaseous fuels in a book on Internal Combustion Engines, Theory and Design, by Robert L. Streeter, which has just been issued in a second edition by McGraw-Hill Book Co., Inc. Of liquid fuels, gasoline, kerosene, crude and fuel oil and alcohol are mentioned, but for large engines only crude oil and fuel oil are used to any extent.

This book is a textbook, and the first edition grew out of a series of notes used by the author in instructing classes in oil and gas engine design at Renssalaer Polytechnic Institute. The first edition appeared in 1915, and as a great deal of progress has been made since that time, rather sweeping revisions were necessary to make the book accord with present practice. In making these revisions the author had the assistance of Prof. George A. Goodenough of the University of Illinois in sections pertaining to the thermodynamics of the engines, and of Lawrence A. Pomeroy in the section on automobile engines.

The section on automobile engines, which is of most direct interest to readers of this paper, is limited to 14 pages, from which it may be judged that the subject is not gone into in any great detail. Pomeroy defines the automobile engine as a prime mover of "capacity to develop anything from 5 to 90 per cent of its maximum indicated mean effective pressure or torque over a speed range of 100 to 3500 r.p.m." By this he evidently tries to convey the idea that an automobile engine must be quite flexible with respect to both speed and torque, but to our way of thinking he has been rather unfortunate in his choice of figures to fix the degree of flexibility attained. We doubt very much whether there is a stock engine made in this country today that comes within his definition. Most engines could not be coaxed to turn over at 3500 r.p.m. without load, let alone under 90 per cent of their maximum torque, and it is also too much to expect 90 per cent of the maximum torque from a high speed engine at so low a speed at 100 r.p.m.

The section devoted to automobile engines deals chiefly with the problem of the most desirable number of cylinders for a passenger car engine. It also contains illustrations and brief descriptions of four popular makes of American engines. Information on carbureters and ignition apparatus of types used on automobiles is given in other sections of the book. A series of review questions following each chapter should be a help to the instructor who wishes to use the book in connection with his classroom work.

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Fundamentals of Wage Payment Plans

VARIOUS methods of wage payment are used in automotive plants, each of which has some distinct advantage. Considerable experimenting is still going on in an effort to find the best system for different conditions of operation. It is not likely that any single method will ever become universal, because of the variation in the character of automotive work.

Certain fundamentals should be incorporated in every system of wage payment.

The method of figuring how much a man has earned should be simple enough to permit the worker to understand readily how his earnings are computed. Simplicity is desirable from the standpoint of the company as well, since complex systems involve heavy bookkeeping expense.

Special incentives, such as bonuses, when incorporated in a wage system, should be paid at frequent intervals. Experience in many factories indicates that the practical value of a special wage incentive is almost in direct proportion to its frequency so far as the average factory worker is concerned.

When piece-work is involved, a rate once set should be maintained unless some change is made in the character of the operation. A piece-work system loses all of its incentive value if the rates are lowered when a man achieves a high production. Where the practice of cutting piece-rates is customary, the system is not really a piece-work system at all. It is simply a day rate payment disguised, and employees readily recognize it as such.

Low unit-cost is the chief aim of all production. This fact should be recognized in designing and operating wage payment plans. The unit-cost of each piece turned out—not the actual wage paid to the worker—is what determines whether or not production is being carried out economically.

Show Atmosphere

IN addition to presenting an imposing array of beautiful body and chassis work and some novel features of design, the first annual exhibition of the Foreign Automotive Association, held at the Hotel Astor, New York, Nov. 4-10, achieved something really distinctive in the way of "atmosphere." Even the hard-boiled veteran of many automobile shows could scarcely fail to sense the presence of something different in the tone of this exhibit.

Soft carpets, deep-cushioned settees, and an all-pervading dignity of display gave an almost perfect background to this showing of the finest in American and European coach building. The visitor had to rub his eyes now and then to be sure that he was not in the midst of some display of fine paintings shown in a private gallery. The harmonious blend of surroundings with exhibits was achieved through providing an atmosphere of dignity and quiet. It was a marked contrast to the blaring band sometimes used in an attempt to fill a hall which is not crowded.

The financial quality of the visitors was kept up to that of the cars by an admission charge of $1.10. Attendance was not large in quantity at any time during the week, but the exhibitors in general were well pleased with the active buying interest shown by those who did make their appearance.

Awards for Highway Transport Study

IMPETUS undoubtedly will be given to more intensive study of road transport problems by the announcement which soon will be made by the Highway Education Board of suitable awards for the best published articles on the economics of highway transport and engineering as well as for the most valuable scientific research into these questions.

Details in reference to the awards have not been formulated definitely but they will be sufficient to justify effort in these directions. Winners of the contests will be entitled to recognition as real students of these new professions which are destined to play such an important part in the development of modern transportation. By offering the awards, the Highway Education Board is taking another forward step in a field where it has done much difficult pioneering.

Most of America's colleges and universities which offer students course in engineering have included highway transport in their purview and the classes

are becoming larger each year, but the supply of graduates probably will not be large enough to meet the demands for some years to come.

War and Peace

IN the welter of conflicting industrial interests, both management and workers are prone to focus too much attention on the winning of a particular point and too little on achieving permanent progress. Every time a big employer or group of employers takes a broad, constructive stand on a problem of employee relations, the cause of industrial peace is given new impetus.

The report of the committee on industrial relations of the American Gear Manufacturers' Association, submitted at a recent convention, is worthy of commendation and careful reading by every automotive executive. Its merit lies in its general approach to the question, as well as in the specific topics outlined.

"Modern business depends more upon men than upon dollars," the report says. "Labor turnover costs far more than many slight variations in labor pay that worry us so much. Under no circumstances can the right spirit be obtained if it does not emanate very directly from the head of the industry. The future of America as a nation requires that every effort be put forth by the employer to help his employees to think right. Industrial relationship is 99 per cent a matter of applied personality."

Viewing industrial relationships as a problem to be solved rather than as a fight to be won, management is in a fair way to adjust a large share of its personnel troubles. The attitude of the Gear Association is specially noteworthy in view of the fact that its labor difficulties have been acute at many times in the past.

Buses Should Look Like Automobiles

ARE there any good reasons why buses should be made to look and ride like trolley cars? It would seem far more logical to make them look and ride like the passenger car, which, indeed, they are.

By this we do not mean that present types of buses performing satisfactory service need be thrown into the discard. In most particulars they are quite well suited to the particular work for which they are designed, but it does not follow that they cannot be much improved. In fact, some bus builders now are supplying many of their chassis with so-called de luxe bodies which resemble passenger cars in general lines and seating arrangements.

Bus builders should not all follow the same pattern, but neither is it true that their products need resemble the trolley car either in inside or outside appearance or in seating arrangements. It probably would cost but little if any more to make the average bus look like an automobile. As for seats, surely no one will argue that the usual hard rattan seat is conducive to comfort or to attracting patronage. Certainly no one would consider putting such a seat even in the cheapest passenger car.

In many cities traffic has become so dense that use of the privately owned passenger car in business districts is well nigh precluded even though many owners who are accustomed to its comforts are loath to abandon its use. The alternative is usually the trolley car, which is frequently much too crowded for health or approximate comfort, or a bus which too often is open to similar criticism plus poorer riding qualities in some cases.

There is, consequently, a growing market for buses which, to a large extent, take the place of the private passenger car for trips to and from the business district and the class of potential customers in general are quite ready to pay for a comfortable seat in a comfortably riding vehicle. Furthermore, existing bus lines undoubtedly can better their service and correspondingly increase their patronage by installing seats which have better cushions and springs and otherwise increasing the comfort of riding.

Factories for Farmers

WHEN Henry Ford undertook seriously the development of water power, he contended that country brooks should be dammed so that industrial plants could be built on their banks to provide off-season employment for the farmers who lived in the vicinity. This proposal was greeted with smiles as another of his foibles, but like most of his suggestions it seems to have practical merit.

There are thousands of wheat growers, for example, who would be mighty glad if there were a factory in their neighborhood in which they could work during the winter at good wages to make up the deficit between the low prices they get and the high prices they give.

The farmer works long hours several months of the year, but there are several more in which he might welcome lucrative employment in a shop. One reason for labor troubles and labor shortage in this country is that industry is too closely concentrated. Future generations will not permit wanton waste of water power and the time may come when another Ford dream will come true.

Women Dictate in Car Buying

THE "female of the species" undoubtedly exerts a tremendous influence in the buying of automobiles. She usually has the final word in this respect as in most others and when she selects the car she likes the mere man who is paying for it usually agrees it is the one they should have, although he may be convinced personally that it has no mechanical merit whatever.

A few manufacturers, notably Jordan, are capitalizing the feminine appeal and it is selling cars for them, especially closed models. Women are shrewder than they are suspected of being in respect to the mechanical excellence of motor cars, but they inspect bodies and body fittings much more carefully than men. As a matter of fact, from a sales standpoint, there is no part of the car which is more important today than the body. Not only manufacturers but dealers as well should cultivate assiduously all feminine prospects.

CARS STILL SELLING IN GOOD VOLUME

NOTHING of vital importance developed in the sales situation in October as compared with previous months. Cars are selling in good volume with the closed car taking the majority of the business. Used car conditions are not as good in many sections of the country and in some territories they are bad.

Time sales are apparently on the increase and some territories indicate a strong desire for longer terms on these sales. The truck market is fairly good, but appears to have dropped off more than the passenger car market.

The strong features of the position are:

(1) Continued good sales of cars in most sections of the country.
(2) Absence of any accumulated stock of new cars.
(3) Better financial condition of dealers.

The weak features are:

(1) Backing up of used cars, which is becoming embarrassing in most sections of the country.
(2) Extension of time sales and tendency to lengthen the terms of deferred payments.
(3) Uncertainty in some territories over the general business outlook and some question as to country buying.
(4) The reappearance of ill-considered legislation in some localities, which would have a retarding effect upon sales.

The most important of the weaknesses is the accumulation of used cars, which must inevitably make itself felt in the new car sales unless ways and means are found for controlling trades.

It is evident that the used car situation is in much better shape where the dealers have come together on some plan for handling it and in some sections there are no indications of accumulation to any abnormal extent.

The stock market did not show any confident attitude on business during October, although it is evident that the conditions were largely the result of professional trading and there has been support whenever the situation required it. The recent actions of the stock on the extra dividend of the United States Steel Corp. illustrates this position very thoroughly.

Employment remains good, profits are running as well as they have been doing, and volume is keeping up in general.

There is no doubt that sales resistance in the passenger car business is somewhat greater and that time sales are running larger, but the general outlook for immediate future continues good.

Conditions in chief distributing centers as reported by correspondents of AUTOMOTIVE INDUSTRIES are as follows:

Sales Outlook for November Bright in Some Sections

New York

NEW YORK, Nov. 7—Car sales in the metropolitan territory during October were spotty. Makes in which new models were announced in September and late August, and in which the New York dealers were able to get good deliveries, had a very good month, but other lines, although equalling or slightly exceeding October of a year ago, generally did not hold up to the volume maintained through the last few months.

In the higher price class there was a very noticeable falling off in open model demand and a somewhat compensating increase in closed car prospects.

The lion's share of October business appears to have gone to one or two makes in the higher price class where new models had been recently announced, and to a few in the medium and lower price classes who were similarly favored.

The outlook for November business is good for those dealers who are prepared to make deliveries on closed jobs, which are now running better than 75 per cent in the demand for future delivery.

As might be expected, the used car market is showing signs of the usual decline.

Minneapolis

MINNEAPOLIS, Nov. 5—Retail dealers in the Northwest continue to take their quotas of cars notwithstanding a slump in retail sales. Opinions as to the extent of the slump compared with other seasons vary, but conditions appear to be off a little more than usual at this time of the year.

Crop returns are good, but the impetus to business is not felt yet by distributors. Much depends upon weather conditions this winter whether business will keep on or die out until spring. The buying public appear to have no money for cars just now. Meanwhile retail dealers in taking full quotas ordered are stocking up for spring business.

Des Moines

DES MOINES, IOWA, Nov. 5—Business in the Des Moines territory during October was about the same as during September, both months being better than the same period of 1922. The expected falling off in sales is already well in evidence, bad roads and wet weather having had an important part in the slowdown.

The farmer situation remains about as it has been for some time, and distributors report that the small town dealers are sitting pretty tight. This is particularly true of the open car market, as many dealers have had more open cars than they could move.

In Des Moines the retail situation has held up fairly well, although it has required drives to maintain the standards of the past several months. Salesmen's contests have been the order in Des Moines salesrooms.

There is no evidence of local distributors or dealers stocking cars in anticipation of a heavy spring business.

Kansas City

KANSAS CITY, Nov. 5—Sales of new cars have been "good to bad" in the Kansas City territory during October. "Spotty" spells it; some dealers having shown marked gains, some holding their own, some experiencing decline.

While the lower priced cars have sold proportionately better, there are some dealers in higher priced lines who have had unusually good business. Closed cars of higher prices have moved well.

Distribution to the territory has been spotty also, the great growing sections taking practically no cars, but the mixed farming sections absorbing good numbers. It seems certain that in diversified farming districts, the farmers are getting back on their feet. Missouri farmers are said to be particularly prosperous this year, with total value of production much ahead of 1922.

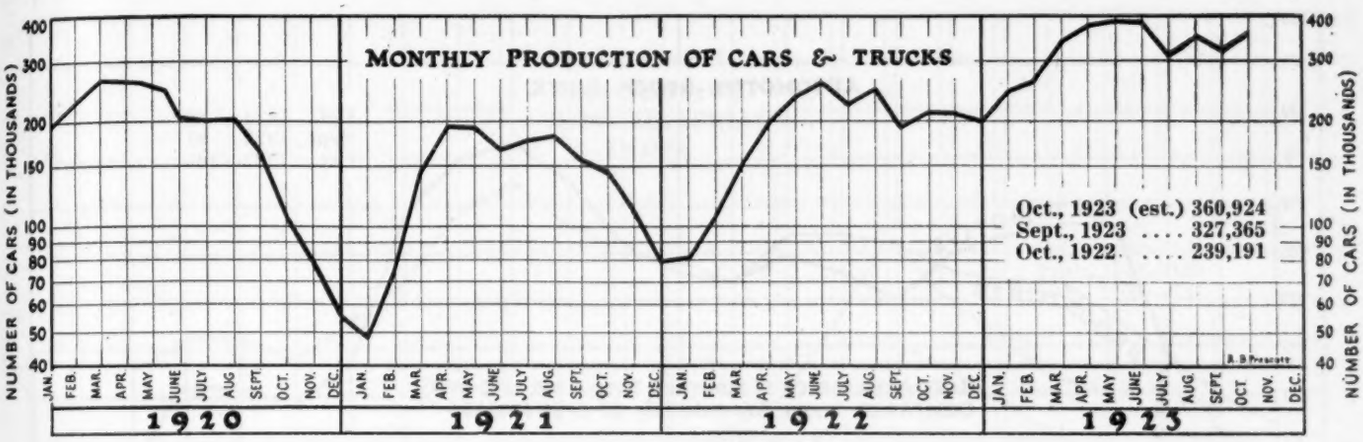
Toledo

TOLEDO, Nov. 5—Local automotive dealers are expecting a better November for sales than a year ago, based upon the business done in October, which was very good. Most dealers experienced the usual slackening of sales that they expected, but some reported business keeping up. Those handling lower priced lines who had quotas to sell report success in marketing them.

Dealers are not storing cars for spring demand beyond a reasonable number.

(*Other conditions on page* 967)

OUTPUT IN OCTOBER PLACED AT 360,924



Total for 10 Months Only 261,649 Short of 4 Million Mark

NEW YORK, Nov. 7—Estimates by the National Automobile Chamber of Commerce, based on shipping returns, place October production at 360,924 cars and trucks, an 11 per cent increase over September.

This puts passenger car production for the first ten months of 1923 over 3,000,000, a total that was estimated last show time as the probable production of both cars and trucks for the full year of 1923.

The October count brings the total for both cars and trucks to 3,738,351 for the ten months and makes it certain that the industry will pass the 4,000,000 mark for the twelve months and with plenty to spare.

Even if the industry travels the remaining months of the year only at the pace shown in November and December, 1922, which seems hardly likely, the total for the year would go to 4,161,643. It is more likely, though, that the average for November and December of this year will be big enough to make the year's figures at least 4,350,000 for both cars and trucks.

Daily Average Is Less

On a daily production basis October was not up to September. The latter had only twenty-four working days because of five Sundays and a Labor Day holiday in a thirty-day month, whereas October was a thirty-one-day month, with only four Sundays and no holidays. This, therefore, gives September a daily average of 13,640 as compared with 13,370 for October.

A contributing factor to October's fine showing was General Motors, whose units broke all previous records for the corporation with 87,500. Ford also traveled at a fast clip, while reports from other big concerns tell a story of busy factories and large contributions to the crop of new cars and trucks.

All of these new vehicles are being moved to market without any trouble whatsoever; James S. Marvin, traffic chief of the National Automobile Chamber of Commerce, reporting that the railroads are functioning 100 per cent.

N. A. C. C. Returns Show 11 Per Cent Increase in Production During October Over Previous Month

NEW YORK, Nov. 5—Shipping figures compiled by the National Automobile Chamber of Commerce for October give an estimated production of 360,924 cars and trucks. This is an increase of 11 per cent over September and is 51 per cent greater than October, 1922.

The following table presents the statistics for the first ten months of this year and for the months of 1922:

	Output		Carloads		Driveaways		Boat	
	1923	1922	1923	1922	1923	1922	1923	1922
January	243,465	91,210	35,228	15,357	30,031	7,479	728	143
February	276,848	122,462	36,165	19,636	43,613	10,173	882	180
March	354,805	172,879	44,983	27,753	62,983	16,917	1,908	560
April	382,501	219,710	46,095	31,334	60,467	21,381	5,027	2,960
May	393,861	256,405	45,339	33,416	62,210	28,827	12,812	7,406
June	378,332	289,224	40,550	34,230	58,761	33,857	13,418	7,737
July	327,824	247,042	32,426	29,116	46,511	28,100	10,049	7,030
August	344,866	274,091	37,770	32,817	50,460	36,768	8,800	10,104
September	327,365	207,028	36,885	25,950	37,400	30,055	8,500	8,002
October	360,924	239,240	41,700	26,980	39,200	33,320	8,000	7,040

Factory shipments for the other months of 1921 and 1922 and output for 1922 follow:

	Output	Carloads		Driveaways		Boat	
	1922	1921	1922	1921	1922	1921	1922
November	237,201	14,264	27,232	10,528	27,376	1,402	5,070
December	228,252	12,100	26,900	7,500	27,500	134	1,300

Motor vehicle production segregated as to cars and trucks is as follows:

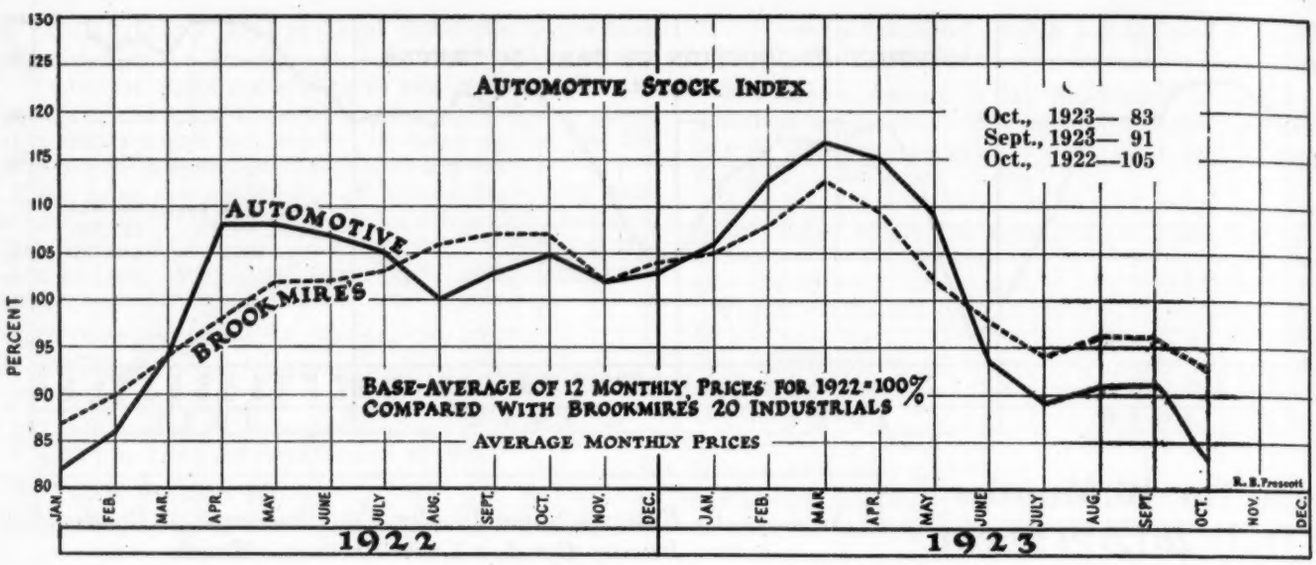
	1922			1923	
	Cars	Trucks		Cars	Trucks
January	81,693	9,517	January	223,819	19,646
February	109,171	13,291	February	254,771	22,067
March	152,959	19,920	March	319,768	35,037
April	197,222	22,488	April	344,639	37,862
May	232,457	23,948	May	350,409	43,452
June	263,053	26,171	June	337,359	40,973
July	225,085	21,957	July	297,330	30,494
August	249,490	24,601	August	314,372	30,619
September	187,693	19,335	September	298,910	28,456
October	217,534	21,706	*October	325,000	36,000
November	215,340	21,861			
December	208,006	20,246			

*Estimated.

SALES IN SALT LAKE CITY

SALT LAKE CITY, Nov. 5—Automobile sales are ahead of last fall and business has been holding up well for the last six weeks. Here and there a slight falling off is reported.

AUTOMOTIVE STOCKS TAKE SHARP DROP



New York Exchange

	Oct. 2	Nov. 5
Ajax Rubber	6¼	6
American Bosch	27¾	27
American La France	11¼	11
American La France pfd	88	....
Case, J. I.	29	20
Case, J. I. pfd	66	66
Chandler	45⅛	48
Continental Motors	6	6⅜
Eaton Axle & Spring	20¾	23
Electric Storage Battery	57	61¼
Emerson-Brantingham	1	1¼
Emerson-Brantingham pfd	6½	14
Fisher Body	162	158
Fisher Body of Ohio	96	98
Fisk Tire	6⅞	6¾
Gardner Motor	6¾	6¾
General Motors	13⅜	14¼
General Motors pfd	82	79
General Motors 6%	82½	80
General Motors 7%	97	95
Goodrich, B. F.	21½	19½
Goodrich, B. F. pfd	74	75½
Goodyear Tire pfd	38¼	35¾
Goodyear Tire pr. pfd	90	90
Gray & Davis	7	7
Hayes Wheel	33½	35
Hendee Mfg.	16½	17
Hudson	22⅛	24
Hupp	16¾	17
Inter. Harvester	74	75
Inter. Harvester pfd	106¼	106¼
Kelly-S Tire	23¼	24¾
Kelly-S Tire 6% pfd	70	70
Kelly-S Tire 8% pfd	80	70
Kelsey Wheel	81	87
Kelsey Wheel pfd	95	99½
Keystone Tire	2¾	2⅛
Lee Rubber	16¾	13
Mack Truck	73¼	75⅝
Mack Truck 1st pfd	92	85
Mack Truck 2nd pfd	85½	82
Marlin-Rockwell	7	3
Martin-Parry	26	28¾
Maxwell Motors A	37¾	42¼
Maxwell Motors B	10⅜	12⅜
Moon Motors	23	21⅞
Mullins Body	13	14
Mullins Body pfd	89	....
Nash Motors	85	86
Nash Motors pfd A	97	96½
Ohio Body & Blower	2¾	2
Packard	12⅜	11⅞
Packard pfd.	89¼	93
Parish & Bingham	9¼	10
Pierce-Arrow	7⅝	8
Pierce-Arrow pfd	17½	19½
Pierce-Arrow pr. pfd	60	60
Reynolds Spring	20¾	19
Spicer Mfg.	13½	13½
Spicer Mfg. pfd	89	88
Stewart-Warner	77¾	92⅝
Stromberg Carbureter	63	67½
Studebaker	94¼	101⅛
Studebaker pfd	115	117
Timken Roller Bearing	34¾	35⅛
U. S. Rubber	37⅝	35
U. S. Rubber 1st pfd	91	86
White Motor	46¾	49
Willys-Overland	5⅞	7⅞
Willys-Overland pfd	58⅜	73½
Wright Aero	9⅞	10¾

Detroit

	Oct. 2	Nov. 5
Auto Body	....	1
Bower Roller Bearing	....	8½
Continental Motors	6⅛	6½
Columbia Motors	....	1⅛
Edmunds & Jones	....	35
Federal Truck	....	23
Ford of Canada	414	403
Hayes Mfg.	....	1½
Hoover Steel Ball	....	11
Motor Products	138	154½
Motor Wheel	9	....
Packard com.	12⅜	10⅞
Packard pfd.	....	92½
Paige	19¾	18⅞
Reo	16⅛	16⅜
Timken-D Axle com	6	6⅝
Timken-D Axle pfd	....	80

Cleveland

	Oct. 2	Nov. 5
Eaton Axle & Spring	21⅝	22
Firestone	65	63½
Firestone pfd	85	85¼
Goodrich pfd	77½	....
Goodyear	10	8⅞
Goodyear pfd	38	35½
Jordan pfd	200	200
McGraw Tire	⅜	⅛
McGraw Tire pfd	....	⅜
Miller Rubber	65½	....
Miller Rubber pfd	97½	88
Peerless Motors	34	27¾
Sparks-Withington	23	20
Stearns, F. B.	18	17

New York Curb

	Oct. 2	Nov. 5
Aluminum Manufactures	....	23
Cleveland Motors	25	22½
Cleveland Motors pfd	....	85
Dort	....	2⅜
Du Pont Motor	....	4
Durant Motors	29¼	29¾
Durant Motors of Ind	7½	8¼
Firestone Tire	....	....
Ford of Canada	....	395
Goodyear Tire	10⅛	8⅝
Motor Products	....	23
Motor Products pfd	....	42½
Motor Wheel	9½	8½
National Motors	....	....
Paige-Detroit	....	19
Peerless Motors	30	27
Perfection Tire & Rubber	....	70
Reo	16	16⅜
Roamer Motor	....	....
Stutz	11	10¾
Timken-D Axle	6½	6¼
Willys Corp. 1st pfd	4	3

Chicago

	Oct. 2	Nov. 5
Bassick-Alemite	23	32¾
Borg & Beck	27	....
Chicago Coach	165	180
Chicago Coach pfd	90	90
Continental Motors	6½	6½
Earl Motors	⅛	....
Eaton Axle & Spring	22	....
Gill Mfg.	17	18
Hayes Wheel	....	....
Hupp	18	17
McQuay-Norris	21	....
McCord	32½	....
Reo	16¼	16⅝
Stewart-Warner	79½	78¾
Yellow Mfg.	268	93

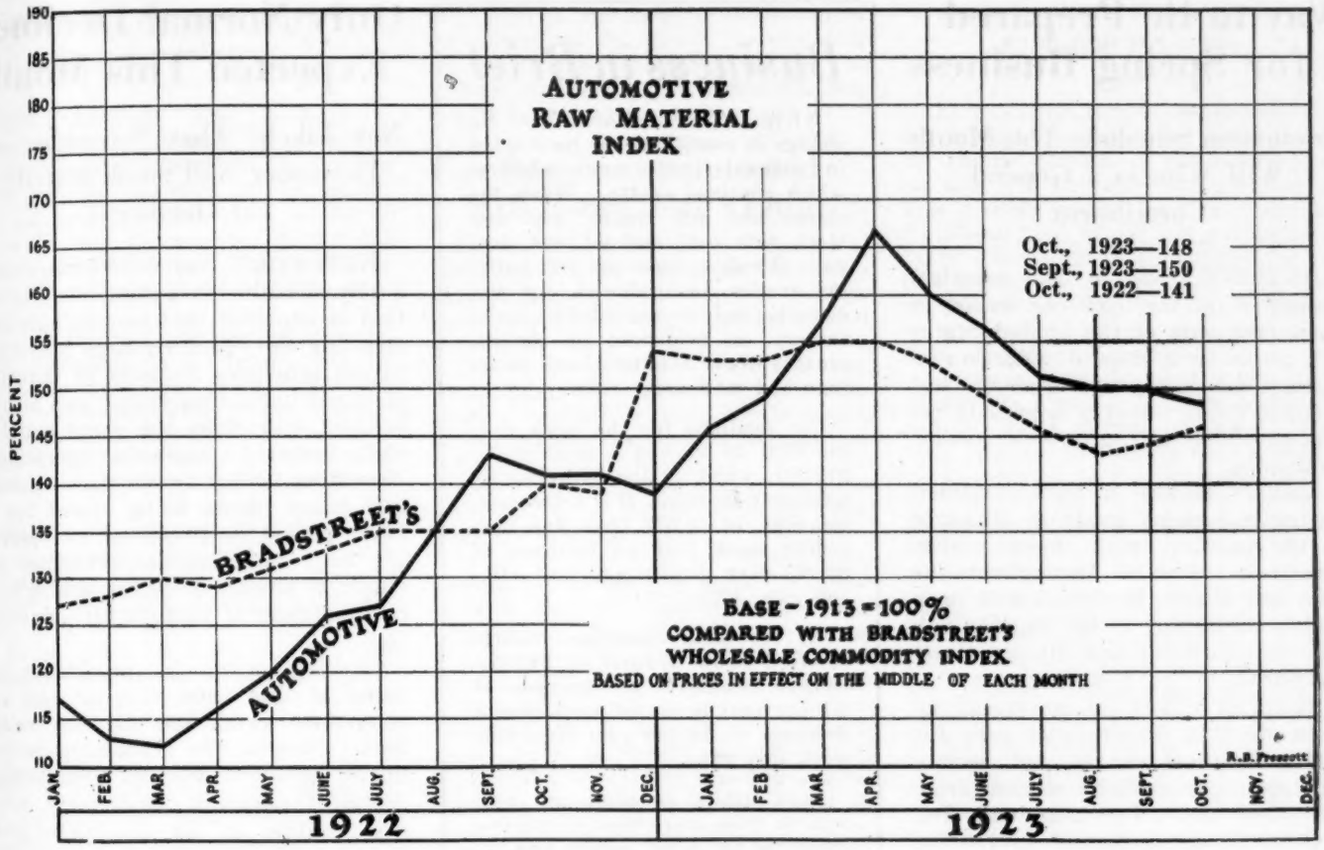
Boston

	Oct. 2	Nov. 5
Gray & Davis	....	70
Hood Rubber	55¼	....

Philadelphia

	Oct. 2	Nov. 5
Electric Storage Battery	58½	61½

MATERIAL COSTS DECLINE SLIGHTLY



Sales Show Decline in Southern Distributing Centers

Charleston

CHARLESTON, W. VA., Nov. 5—Ability of the manufacturers to supply cars and a vigorous automobile census campaign for the early winter months—a campaign which virtually every dealer in the Charleston district feels certain will uncover numerous prospects and real money—has given cause for belief that the movement of cars is going to be brisk and satisfying.

While the supply of smaller cars is particularly good, all local dealers, with the exception of those handling popular comparatively high-priced cars, are handling all fall sales easily.

Charleston State dealers predict a large volume of business for the early spring months.

Louisville

LOUISVILLE, KY., Nov. 5—Although some dealers here have been complaining the last few weeks that business has slowed up, an inquiry into sales figures develops the fact that the leading dealers are selling just about as many cars as in September. Sales have held up later into the season this year than ever before.

Dealers handling the more active lines complain that factories are not delivering seasonable models in season. During September and October there was a heavy demand for closed cars. They could not be obtained. It is the belief of the dealers that the factories are not justified in sitting back, taking no chance whatever in anticipation of a demand that should have been foreseen when the unprecedented sales volume got under way last March.

Used car stocks are being kept down to a minimum. Conservative traders are tightening up still more.

Baltimore

BALTIMORE, Nov. 5—Only slight improvement in retail sales has developed over the last six weeks, but at the same time there is a more noticeable feeling of optimism on the part of the dealers.

Unsettled condition of the public mind on the price question still is held to be responsible for the dullness which exists. What improvement has taken place, however, has brought about more confidence, but at the same time there are many dealers who do not look for a complete recovery until the first of the year.

Few Baltimore dealers are stocking heavily for spring business.

Birmingham

BIRMINGHAM, ALA., Nov. 5—New car sales in Birmingham and the Birmingham territory took a sudden drop early in October, and for the first ten days or two weeks of that month were decidedly less than they had been for some time. The latter part of the month saw an improvement in the demand.

Some new cars are being stocked in this territory. Most of the dealers, however, have back orders sufficient to take care of the larger proportion of their increment and are getting by without stocking cars to date. A few dealers and distributors in this district are still selling more cars than they can hope to deliver, but this is now the exception.

Many of the dealers are having a hard time keeping up a proportionate sale of used cars.

The general situation is still in the uncertain column. Industrial conditions have been merely holding their own since the slump prior to October.

At present it is estimated that Alabama's crop will do well to exceed 500,000 bales. It will take 40-cent cotton to equal last year's revenue from this staple, if this is correct.

(*Conditions in other cities on pages* 978 *and* 979)

MAKERS TO BEGIN STOCKING DEALERS

Way to Be Prepared for Spring Business

Production Schedules This Month Will Witness a General Curtailment

DETROIT, Nov. 5—The practical closing off of the open car season in the larger part of the United States will result in a general reduction in factory schedules in November, but will not bring about a wholesale reduction except in the case of smaller companies.

Leaders declare a well sustained buying movement exists in all parts of the country, with closed models greatly in demand throughout the East and Middle West and with open models continuing to sell in good volume in Southern and Pacific Coast territories.

Factories report no movement toward stocking dealers with cars for spring business as yet, but declare that some cars will be stocked from this time on. November will find dealers taking a certain proportion of output for anticipated spring sales and in December this percentage will become heavier. Closed cars are reported being sold by dealers practically as fast as the factories can build them and several leading makers are behind on deliveries.

Equipped to Build Closed Cars

The fact that factories are far better equipped to build closed cars this year than in other years explains to some extent the continued large production. New models since August have also greatly stimulated buying, factory executives declare, and a number of factories are shipping still against orders received by dealers when new models were announced. In certain other instances production is being pushed to clear out present stocks in anticipation of new models for spring.

Ford Motor Co. will reduce its schedule in November from the 180,000 monthly total, which has been effective for some time past, to a total of between 150,000 and 160,000. The factory reports that dealers will be expected to stock a certain percentage of these for spring buying, but also reports that sales of closed models are in excess of output. Stocking by dealers will be more limited this year than formerly because of sustained buying.

Chevrolet production will continue during the month at upwards of the 2000 daily figure, according to company executives, open model sales continuing large in practically all sections, but closed model shipments gradually increasing. Gray output has been reduced to about 500 for the month while changes at the factory are being completed.

Buick's total of 23,191 for October is the company's highest production mark to date, a total which has been fully absorbed by retail sales. The company is behind on deliveries in some closed models and anticipates a continuance of the heavy buying in November. Dodge Brothers production will continue at approximately the 500 daily rate, and

(*Continued on page* 977)

Business in Brief

NEW YORK, Nov. 5 — No change in conditions has been noted in general trade and industry, which continue spotty. While the cotton and silk trades, iron and steel, soft coal and oil and perhaps the shoe, furniture and building trades have slowed, yet the situation may be regarded as satisfactory, as evidenced by the increases in car loadings, bank clearings and mail order sales.

Car loadings for the week ending Oct. 20 showed a total of 1,072,881, which is the fifth largest total ever recorded. It is a decrease, however, of 11,577 from the preceding week, but an increase of 82,992 over a year ago and 110,589 over 1921.

As for bank clearings, reports received show a total of $7,292,283,000, which is an increase of 5.1 per cent over last week, but a decrease of 6.4 per cent from this week last year.

Bank debits as made up from reports from more than thirty-five cities for the week ending Oct. 31 show a total of $7,184,457,000. This is an increase of 3.1 per cent over the preceding week.

Crop reports are generally favorable, with estimates on corn production ranging from 2,985,000,000 to 3,093,000,000, whereas last year's crop was 2,891,000,000 bushels. Wheat is moving North in good volume and loadings in interior points are heavy.

In the stock market, stocks are active and buoyant, with bonds generally firmer, time money easier and foreign exchanges heavy.

Only Normal Decline Expected This Month

Not Likely That November or December Will Show Activity of October

NEW YORK, Nov. 5—No more than a normal decline in automobile production is expected this month, notwithstanding the relatively high manufacturing schedules followed in October. It is not likely that either this month or next will show the same activity that featured October's operations, November having fewer working days and many plants being closed for a brief period in December or operating on greatly reduced schedules incident to annual inventory taking and readjustment of manufacturing facilities.

Slowing down in production is usual at this time of year and accompanies conditions in the retail field. Despite the slackening in demand, noted in various distributing centers throughout the country, sales are keeping at an unusually good level, with promises that colder weather will see a picking up in business, chiefly in the closed type of car.

Weather Holds Back Sales

Mild weather has been somewhat of a retarding factor in the sale of closed models, although it has been of material assistance in the retailing of open cars. Manufacturers, however, have been centering production, to a large extent, on the closed type in expectation of a heavy demand. This demand, it is felt, will come as soon as weather conditions force it.

Parts makers report a healthy condition existing in their branch of the industry, with no pronounced let-up probable during the remaining months of the year. Plants have been unusually active throughout the year and experienced a slackening several weeks after the usual time. The export outlook, as with car producers, is particularly satisfying. Shipments of automotive products to overseas markets have made a steady increase and from the present outlook will show greater volume during the coming months.

Production of motor trucks is moving along on steady, conservative lines, actual sales conditions continu-

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Moskovics Retires as Marmon Official

Will Retain His Holdings—Plans to Devote Energies to Personal Affairs

INDIANAPOLIS, Nov. 4—Fred E. Moskovics, who has been vice-president of the Nordyke & Marmon Co. for five years and an executive of the concern for ten years, has resigned to devote his entire time for a period to personal affairs. He will retain his substantial interests as a stockholder in the company.

Walter Marmon, president of the company, in expressing his regret over the resignation, said, "The move of Mr. Moskovics was necessitated by the pressure of his personal affairs. The necessity which compels the severance of a very pleasant relationship is regretted by both of us."

Moskovics first became associated with the concern ten years ago as commercial manager, and under his management Marmon sales rose steadily until war time, when war work took a great part of the concern's energies. At that time Moskovics was made vice-president and was placed in general charge of the vast work of making aviation motors at the company's plant.

Under his direct leadership and inspiration the concern won the Champion Liberty Motor Builder's Pennant during October, 1918, in competition with all the factories producing the motor. This pennant later was awarded the company permanently.

Once in Bicycle Industry

The early bicycle days of the industry claimed Moskovics. Subsequently he was the first sales manager of the American branch of the Continental Tire Co. Later he became president and general manager of the Allen Kingston Motor Car Co., which made racing history a dozen years ago. Ralph De Palma was discovered by Moskovics and his company. At the time of the merger with the Bristol Engineering Co., Moskovics became secretary-manager. Just previous to his Marmon connection he had been sales manager of the Remy Electric Co.

Haynes Creditors Get Plan for Refinancing

KOKOMO, IND., Nov. 5—Directors of the Haynes Automobile Co., in a letter to creditors, say arrangements have been made for $1,000,000 additional capital, provided creditors accept 10 per cent cash, an equal percentage next June and the balance in notes due January, 1925.

The company will retain the rights to make monthly payments following June, if it desires. A complete reorganization in management is contemplated, the directors state.

Motion for continuance of the hearing against the company made in court here Saturday was granted by the court, and today's date, which was originally set for the hearing, has been moved forward to a date not yet announced.

The defendants set out as a cause for postponement that the books of the company must be thoroughly examined before the officers will be able to present their side of the case. It is probable that the original petition of the Oakes Co. will not be heard for some time.

Fox Receivers Appointed; Will Reorganize Company

PHILADELPHIA, Nov. 7—Charles S. Rockey and C. K. Olberg have been appointed receivers in equity for the Fox Motor Car Co. of this city, with a bond of $50,000.

The receivers plan a reorganization within thirty days and also plan to continue to complete the cars now in course of construction, as well as to maintain the service department.

Assets of the company as of Sept. 30 are given as $2,246,000, with liabilities less than $500,000.

There are more than 3000 stockholders, owning $2,175,000 par value preferred stock in the Fox company, which was incorporated Nov. 21, 1919, to manufacture air-cooled cars. Its factory is located at Seventh Street and Grange Avenue, and its officers are: A. H. Fox, president; W. J. Rice, P. J. O'Shaughnessy and F. H. Shrenk, vice-presidents; F. H. Golding, secretary and treasurer. Sheldon Potter, Budd G. Nice, Max A. Sherritt, A. R. Robson and T. S. Shibe, together with the officers, are directors.

Creditors of Apperson Agree to Accept Notes

KOKOMO, IND., Nov. 3—The meeting of creditors of the Apperson Brothers Automobile Co. last week indicated a willingness to withhold pressure on claims until the new organization has an opportunity to liquidate present inventories and inaugurate production to extricate the concern from its difficulties.

A majority of the creditors present at the meeting are said to have signed agreements to accept notes payable next August and May and June of 1925.

President Don McCord states that he has the assurance of bankers that they will advance working capital provided present creditors agree to withhold pressure. All creditors whose claims are less than $200 will receive cash.

Suit for $200 Started

KOKOMO, IND., Nov. 3—Notwithstanding the meeting of Apperson creditors when the majority present showed a willingness to await further developments and the working out of the refinancing plan, the Indianapolis Pump & Tube Co. filed suit here today on a claim of $200.

The plan announced that all claims of $200 or less would be paid in cash in the event that creditors generally agreed to the terms of the extension.

Winton Engine Plant Offered Stockholders

Can Avail Themselves of Offer from Bankers' Committee—$700,000 Price Set

CLEVELAND, Nov. 7—Stockholders of the Winton Co. are being notified that the engine division of the company is for sale, and that they can purchase it. This division makes what is known as the Diesel type of oil and gas engines.

The announcement states that the action follows the failure of the proposed merger of Haynes, Dorris and Winton, by virtue of which the companies were to be strengthened financially.

The letter to stockholders is signed by Alexander Winton, Thomas Henderson and George H. Brown, officials of Winton. It states that the bankers' committee has offered to sell the engine works to these officials for $700,000, including the real estate, buildings, machinery and inventory.

Winton officials state that they own slightly less than 20 per cent of the $1,500,000 preferred stock outstanding, and that if each preferred stockholder would contribute 50 per cent of his present holdings, sufficient capital would be obtained to organize the new company to buy the engine.

Under the plan outlined, the stockholders would retain possession of the automobile plant and by participating in the formation of the new company to satisfy debts would place the automobile factory in condition either to be liquidated or operated. Stockholders have until Nov. 10 to subscribe, after which time the committee announces that it will feel free to present the plan to others who are not stockholders.

Dorris Financing Plans Given to Stockholders

ST. LOUIS, Nov. 5—Plans for refinancing the Dorris Motor Car Co. were submitted to a meeting of the stockholders, held on Nov. 2, and details are to be worked out within two weeks and submitted to another meeting for ratification. Until the next meeting no detailed announcement of the plan would be made public, according to J. F. Culver, secretary-treasurer of the company.

It is expected, however, that the reorganization will be effected by a combination of the present stockholders with outside interests whose identity is not to be made known at this time, and that the reorganized company will operate with the same personnel and continue the present line of passenger car and truck models.

It is expected that the plan will provide capital necessary for the proper exploitation of the company's product, and that the company will devote more time and energy to the manufacture and sale of buses.

Control Is Changed of Bock Bearing Co.

Preferred Stockholders Elect New Directorate, With W. E. Bock President

NEW YORK, Nov. 5—Control of the Bock Bearing Co. of Toledo now is in the hands of the company's preferred stockholders, and a new directorate has been elected.

W. E. Bock, founder and first president and general manager, has been chosen president, and R. B. Wallace, vice-president. R. E. Clingan remains as general manager, and C. J. Steinbicker, former treasurer, has been made secretary and treasurer. In addition, Maynard H. Murch, Frank A. Scott and A. V. Cannon have been elected directors.

This move, which was made at a meeting held in this city, gives the Bock company a free hand and affords it an opportunity for expansion which President Bock and his associates feel they did not have under the old order. Previously the company was controlled by the Standard Parts Co. of Cleveland through its ownership of the Bock common stock, a condition which existed for six years.

The balance sheet of the company as of Oct. 1, 1923, shows current assets, less all reserves, of $447,336, including cash of $34,301; notes and accounts receivable, less reserves, of $98,656, and inventory, less depreciation, of $333,584. Against this are total liabilities of $198,656, showing a credit ratio of approximately 2½ to 1. The company has no bonds or long time notes, its only outstanding liabilities being its commercial indebtedness.

The total value of land, buildings and machinery, as indicated in the statement, is $1,051,916, against which has been charged depreciation of $569,160, or a net depreciated valuation of $482,756.

The American Appraisal Co.'s recent statement of value, covering fixed investment, is something over $1,000,000, it is stated.

Leonard Kennedy Buys Curtiss Plane Control

NEW YORK, Nov. 5—Leonard Kennedy & Co. henceforth will manage the affairs of the Curtiss Aeroplane & Motor Co. through the purchase of the controlling interest from President C. M. Keys as represented by 115,000 shares of common stock, purchased originally from the Willys-Overland Co.

Kennedy has been elected a director of the company and while Keys will remain as president, the Kennedy interests will relieve him of some of his duties.

FINAL BARTON AXLE DIVIDEND

MILWAUKEE, Nov. 5—Unsecured creditors of the defunct Barton Axle Co., Barton, Washington County, Wis., are assured a final dividend of more than 50 per cent, according to a report made by the chairman of the creditors' committee. The plant and equipment was sold some time ago to L. R. and W. L. Huffman of Elkhart, Ind., motor truck manufacturer, for $76,000, and with final payments on the sales agreement about to be made, affairs will be wound up and distribution of proceeds made to creditors.

Hansl Becomes President of Winther Under Merger

KENOSHA, WIS., Nov. 5—The organization of the new Winther Motor Co., which takes over the business and assets of the bankrupt Winther Motors, Inc., has been perfected, and along lines fitting in with the plan of the Amalgamated Motors Corp., which is a merger of a number of truck and parts concerns.

The officers of the Winther company are: President, F. W. Hansl; vice-president and general manager, R. D. Mock; secretary-treasurer, Robert Bursner. The directors are all members of the stockholders' protective committee of the old concern, namely, Dr. E. W. Timm, H. R. Manger, J. M. Lewis and H. A. Wrucke of Milwaukee.

The Winther Motor Co. is capitalized at $500,000 and is organized under the laws of Wisconsin. Transfer of the assets of the bankrupt concern to the new ownership was approved Oct. 31 by A. B. McCall of Kenosha, trustee.

Carolina Body Co. Buys Southern Truck Factory

GREENSBORO, N. C., Nov. 6—The Carolina Body Co. of Greensboro has purchased the entire plant and equipment of the Southern Truck & Car Corp., manufacturer of the Southern truck, and will use the plant in the future for the manufacture of a complete line of bodies for various types of chassis.

The company will build a complete line of standardized bodies for the Ford chassis, commercial use, four different types for the Graham and four types for Dodge Brothers.

The company has been operating on an extensive scale at Greensboro for some time, and acquirement of the additional plant largely increases its manufacturing facilities.

Midwest Engine Corp. Is Sued by Creditor

INDIANAPOLIS, Nov. 3—The Butler Manufacturing Co. of this city, maker of pistons, rings, etc., filed suit for receivership against the Midwest Engine Corp. here yesterday claiming insolvency and inability to pay a debt of $870, said to be due it.

Representatives of Midwest deny that there is any danger of insolvency facing the new concern which took over the assets of the old Midwest Engine Co. some time ago.

The major operation of the concern is the repair of railroad freight cars.

Durant Is Changing Sales Organization

Centralization of Control Partly Abandoned—New Star Ready to Be Built

NEW YORK, Nov. 6—The selling organizations of Durant Motors, Inc., are being reorganized, and centralization of control will be abandoned to a considerable degree.

The Durant four and the Star will be handled together, with four regional organizations, operating independently, which will have headquarters at Elizabeth, N. J.; Flint, Mich.; San Francisco and Leaside, Ontario. Each will have charge of a large territory.

Sales of the Locomobile, Flint, Princeton and Eagle will be handled in combination also with four regional organizations, but General Manager E. B. Jackson of the Locomobile Co. will be in general charge of sales in all districts.

Will Increase Flint Output

The redesigned Star, which will compete hereafter with the Chevrolet and Overland, will go into production on a large scale immediately, and production of the Flint will be increased as rapidly as possible. Present output of this model, which is in the Buick and Studebaker price class, is about forty a day.

Experimental work has been practically completed in the six-cylinder Eagle, which will be in the Oldsmobile price class, but no date has been set for putting it into production. The idea of making a four-cylinder Eagle has been abandoned. It is expected the Princeton, which probably will compete with Cadillac, will be ready for the market at a comparatively early date.

Dealers' floors have been practically cleared of the old Star models so that they will be ready to plunge at once into sales of the new and slightly higher priced line.

New Company Takes Over U. S. Gear Shift Business

MILWAUKEE, Nov. 5—Articles of incorporation have been filed by the United States Automatic Shift Co. of Eau Claire, Wis., with a capitalization of 6000 shares of common stock having no par value. The principals are B. R. L'Hommedieu, John S. Allen and A. C. Larson, all of Madison, Wis.

The new concern takes over and will operate the bankrupt U. S. Gear Shift Co. of Eau Claire, the assets of which were bid in several months ago. In addition to resuming the production of the Laursen hydraulic gear-shifting mechanism for motor vehicles and similar purposes, the new concern intends to manufacture equipment specialties.

Ford Likely to Add to Branches Abroad

Expansion Certain to Come in South America, Following Managers' Meetings

DETROIT, Nov. 5—General expansion of Ford foreign branches is forecasted as a result of the meeting of the company's foreign managers at the factory held during the last two weeks and still continuing.

In the South American field, it is practically certain that the managers of the three plants on that continent will take back with them plans for additions to present buildings, which it is estimated will give facilities for an increase of 40 per cent over business of this year.

No action has yet been taken at the meeting as to the location of a Ford plant on the west coast of South America, but it is regarded that announcement of such a plan will be made either directly following the meeting or within the next few months. The conditions indicating this are the reports on the generally improved situation in Chile and the fact that the door to large automobile business has been thrown open in Peru by the removal of tariff restrictions.

Increased Business Reported

Plants at Buenos Aires, São Paulo and Montevideo reported largely increased business over any previous year, business which, in fact, taxed the capacity of each plant and which is resulting in the plant expansion. Buenos Aires will make and sell approximately 21,000 cars and trucks this year, São Paulo approximately 11,000 and Montevideo about 3500. In the Argentine this is an increase of almost 70 per cent over 1920, the best previous year.

Throughout South America the field for automobiles is regarded as decidedly encouraging despite adverse exchange and unsettled crop conditions. There is some pessimism among business men as to the immediate future, but this has had no effect upon actual business and is regarded by Ford executives as more fancied than real. Crops in the Argentine are large, which, it is feared, will result in lower prices.

Growth in Interior Business

Interior business is developing rapidly, and Ford agencies are being established at practically all points. In the Argentine alone there are about 350 dealers at this time. Road conditions are bad in the interior with only meagre action being taken to improve them, but as there is a great deal of agitation for better roads, it is expected to result in definite construction programs being outlined within the next few years in the more important countries.

The Ford weekly payment plan has been started in the Argentine, with about 600 enrollments in the first month. There is no used car problem for the small car dealers, but the dealers in larger cars are finding it necessary in most of their sales to accept trade-ins.

No decision has been made relative to the expansion of European plants, but the sentiment of branch managers indicated the necessity of increasing facilities to meet demands. Export business of the Ford company, independent of the Ford Co. of Canada, will run approximately 10 per cent of domestic business, it is expected, which means that, if sales in the United States are 2,000,000, foreign sales will approximate 200,000.

The foreign plants will continue to be served as heretofore from the main factory here with shipments from New York.

The erection of the new assembly plant at Philadelphia is declared to have no important bearing on foreign business, at least at this time, and has had no part in the foreign meeting. Mexican business has not been touched upon, because this country is served from the domestic plants at Houston and Los Angeles.

Cork Assembling Cars

One development of Ford foreign business which has not been formerly announced is the changing of the Cork, Ireland, plant from tractor assembly to car assembly. All tractor manufacture is now concentrated at River Rouge. The Cork plant is assembling about 350 cars monthly for the Irish Free State alone. Northern Ireland is being served from the Manchester plant. The change at Cork was made because of the growth of business at Manchester, this plant being taxed to meet the British Isles trade.

Those attending the conference were C. F. Wismeyer, Antwerp; R. Munro, Bordeaux; S. C. Murray, Barcelona; H. S. Jenkins, Buenos Aires; George Carlson, Copenhagen; Edward Grace, Cork; F. L. Jursik, Havana; C. L. Gould, Manchester; B. Kopf, Montevideo; K. Orberg, São Paulo; Alexander Lie, Trieste, and J. J. Harrington, European supervisor, Paris.

Advertising Committee of N. A. C. C. Will Meet

NEW YORK, Nov. 5—The Advertising Committee of the National Automobile Chamber of Commerce, of which E. S. Jordan is chairman, has selected Nov. 22 to 23 as the dates and Cleveland as the place for holding its two-day meeting.

Jordan will preside, and the meeting will be devoted to the passenger car interests the first day and to trucks the second. On the first day the principal speakers will be George M. Graham of the Chandler Motor Car Co. and Le Roy Pelletier of the Rickenbacker Motor Co. The former will speak on "Relation of Advertising and Sales" and the latter "Co-operation Between Dealer and Factory in the Matter of Advertising."

On the second day, Henry R. Trumbower of the United States Bureau of Public Roads will discuss "How Industry Can Benefit from Government Research."

Rickenbacker Finds Brake Idea Growing

Engineers of American Companies Reported Making Tests on Belgian Roads

NEW YORK, Nov. 5—Four-wheel brakes, balloon tires and the Weyman body were the high lights of the French automobile show in the opinion of E. V. Rickenbacker, vice-president of the Rickenbacker Motor Co., who has just returned from his trip to Europe. During the trip he visited the Paris Salon and Switzerland, Germany, Italy and England.

"When I returned from Europe a year ago I predicted in AUTOMOTIVE INDUSTRIES that four-wheel brakes were coming in this country, and it looks very much as if I hit the nail on the head," said Rickenbacker. "My observations at Paris lead me to think that this braking system is making even more rapid advances than I thought possible when I made the statement.

Brakes at English Show, Too

"Why, at the French show there were eighteen makes of cars, all lighter than Fords, so equipped, and since I landed on this side I have received a cable that in the English show, which I missed, there were fifteen leading British makes showing four-wheel brake equipment.

Continuing, he said:

Several American manufacturers who have not yet adopted four-wheel brakes have become so interested in them as to send engineers to Europe for the purpose of further investigation, and as a result of these investigations I am told that two or three now have experimental cars so fitted running over the Belgian roads. I look for the New York show to astonish the world as to the growth of the four-wheel brake.

This Weyman body, which is a French production, I expect to revolutionize the body-building industry, and it wouldn't surprise me to see it knock out the open car because of its cheapness of manufacture, its light weight and other features. It has proved popular in Europe and I look for it to be taken up by several of the American concerns which had their engineers at the European shows.

Advantages of Body

The body is built without close-fitting joints to make squeaks through the use of steel fittings. Really it is a skeleton over which are fitted panels of Zapon, which is similar to Pantasote. These panels are removable so that repairs are easy.

It can be produced at least 30 per cent cheaper than the present closed bodies and a sedan body can be built for what it now costs to make an open body. It ought to prove a great boon for small car makers, especially. Among its good points are the elimination of closed car vibration, light weight which will make for acceleration, etc.

Balloon tires took the Paris show by storm and were shown on twenty-five makes of cars. They seem particularly adapted to the small car. Michelin got the jump on his rival tire makers by putting out his balloon tires at the Salon, being first in the field.

Tire Makers Welcome End of Retail Lists

Preparations Being Made to Change Method of Figuring Adjustments

CHICAGO, Nov. 2—It was the opinion of tire manufacturers attending the Tire Manufacturers' Divisional Meeting of the Rubber Association of America here yesterday that the consumers' strike is a thing of the past in the industry.

This was one of the important subjects discussed at the regular quarterly divisional meeting, and it was evident that the action of Firestone, Fisk and United States Rubber Co., in abolishing advertised retail price lists, was welcomed by the manufacturers and would be followed by practically the entire industry.

The abandonment of the consumers' list necessitates a change in the method of figuring adjustments, and the Service Managers' Committee recommended that a uniform practice in this respect was desirable. The committee's suggestion was that:

Committee Suggests Plan

Adjustments be based on a figure consisting of dealer's price plus a certain percentage (to be fixed by each company individually) representing the probable cost to the consumer.

To avoid the constant use of a printed consumers' or adjustment list, it is suggested that various proportions of the percentage thus secured be expressed by percentages of dealers' prices and that these only be used in making adjustments. For example: Price to dealer, $40, plus, say, 42.9 per cent to obtain the equivalent of a 30 per cent discount from what used to be the consumers' list equals $57.15, representing price consumer probably pays.

Assuming the tire has given only half service, entitling the consumer to another for half the price of the original, or $23.58, this amount is 71.5 per cent of $40, the dealer price. Consequently, in the absence of consumers' or adjustment list, the purchaser may be asked to pay 71.5 per cent of dealer's price instead of one-half or 50 per cent of what was formerly the consumer list price. In other words, 71.5 per cent of the dealer's price is the same amount as 50 per cent of the former consumer's list.

Ratio Could Be General

It was suggested that this ratio could be used in working out adjustments for any dealer price and to fit any degree of wear. The following examples were given: One-quarter former list equals 35.7 per cent of dealer's price; four-fifths of former consumer list equals 114.3 per cent of dealer's price.

One of the large manufacturers who has abolished the consumer list announced an adjustment system based on the theory that the dealer would mark up his price one-third in order to establish the retail price.

Other subjects of discussion included spring dating and balloon tires. The recent modifications of spring dating recommended by the association were discussed, but no action was taken. There were indications, however, that practically all manufacturers will abolish the 5 per cent cash discount and substitute a 2 per cent cash discount.

There was considerable disagreement as to the future of balloon tires, the predominance of opinion seeming to be that it would not be wise for manufacturers to invest heavily in equipment for the manufacture of balloon tires.

Gear Grinding Machine Given Award of $54,000

DETROIT, Nov. 5—The award of fifteen cents for each splined transmission manufactured by Studebaker Corp. in an infringement of patents of Gear Grinding Machine Co. of Detroit has been confirmed by Judge A. J. Tuttle in Federal Court here.

Under the decision Studebaker must account to Gear Grinding for 322,483 shafts, which, with interest awarded, makes a total award of about $54,000.

The patents in suit were sustained in United States Court of Appeals and referred back to the District Court for accounting. In the suit Gear Grinding is sustained in its contention to basic patents upon production of hardened ground splined shafts.

New Abell Suit Decision Favors General Motors

BOSTON, Nov. 5—The Circuit Court of Appeals has handed down a decision reversing the lower court and directing judgment in favor of the General Motors Corp. in the suit in which Rollin Abell had secured a judgment in the Federal District Court of Boston for $154,816 against General Motors. The suit was brought on an alleged breach of contract whereby General Motors agreed to take a license under certain of Abbell's patents for a valve mechanism.

The Appellate Court holds that negotiations between Abell and General Motors had not arrived at a point where a binding contract had been entered into.

Follen-Lorenz to Fill Former K. & F. Contracts

KENOSHA, WIS., Nov. 5—The Follen-Lorenz Tool & Engineering Works has been organized, and pending the erection of a new shop group will operate in the factory of the defunct K. & F. Manufacturing Co. of Kenosha, the unfilled orders of which concern the new company will take over and execute. These include a large contract for automobile locks.

The Follen-Lorenz company will specialize in tool and die jobbing, mechanical service, metal stamping and deep drawing. It has acquired a considerable quantity of equipment from the defunct Mitchell Motors Co. of Racine for installation in its permanent plant in Kenosha, which will be ready for occupancy about Dec. 1.

Sale of Stock Halted in Advanced Motors

New York Justice Acts on Application Made by Attorney General of State

NEW YORK, Nov. 5—An order restraining the Advanced Motors Corp., 522 Fifth Avenue, from selling any more of its capital stock has been issued by Supreme Court Justice Robert F. Wagner upon the application of Attorney General Carl Sherman.

The company formerly was the Barbarino Motors Corp., promoting a four-cylinder car designed by Salvatore Barbarino and it was stated that the company would make the car in the plant of the old Carlisle Tire Co. at Stamford, Conn.

Complaint made by Dr. Robert E. Kinloch resulted in an investigation by the attorney general, who states that the corporation had sold only $47,544 worth of stock.

The application for an injunction showed that 5,000,000 shares of a par value of $1 were to be issued by the organization, of which 1,500,000 were to be granted to Charles Beadon for forming and promoting the company and the remainder to Barbarino. The latter, it is said, was to turn over 1,000,000 shares to the treasury and the balance of 2,500,000 shares was to be placed in the hands of two of the voting trustees for five years.

Ford to Make Johansson Instruments for Trade

DETROIT, Nov. 7—The Ford Motor Co. has officially announced the acquisition of C. E. Johansson, Inc., Poughkeepsie, N. Y., the American company engaged in the manufacture and sale of Johansson gage blocks and measuring tools. The purchase includes sole American rights to the gages and the methods by which they are made.

The statement declares that the blocks and other instruments will continue to be made for the trade. It is the feeling of the Ford Motor Co. that since these measuring devices are the recognized standard of measurement and precision, and of such value to manufacturers and general public, they should be available to all who desire to purchase them.

C. E. Johansson, inventor of the gages, becomes a factory executive in the Ford organization, and has begun work at the engineering laboratory at Dearborn.

GRAY PLANT IN ST. LOUIS

ST. LOUIS, MO., Nov. 7—An assembly plant for Gray automobiles is to be established here, according to advices received by the Anderson-Strauss Co., St. Louis and Kansas City distributor for the Gray car. The company is now arranging for a site provided with railroad switching facilities.

Citroen to Increase Output to 200 Daily

Expects This Figure to Be Reached by April of Next Year —Making 140 Now

PARIS, Oct. 29 (*by mail*)—At present producing 140 cars per day, Andre Citroen declares that his output will be 200 a day before April of next year, this being the highest production figure ever attained by any European automobile company.

Realizing that this program can be carried out only by the cooperation of all heads of departments and supply firms, Citroen is giving a dinner next week to his own staff and to the representatives of all firms on whom he is in any way dependent. Steel makers, weavers and builders are invited.

The object of this gathering is to explain the general policy of the factory and to solicit the assistance of all in carrying the program to completion.

Citroen is building two types of chassis, rated under French formula at 5 and 10 hp., with a broad series of body styles. The smaller car is very largely produced in the former Clement-Bayard factory in the suburbs of Paris. The entire foundry and forge department at the Quai de Javel factory are about to be pulled down after new foundry and forges have been constructed outside the city.

The drawn tube department, which is now capable of meeting all the Citroen requirements and leaving a surplus for export, is also to be moved to more modern quarters. An American production expert, said to be the most highly paid executive in the French automobile industry, is in charge of Citroen's factory reorganization. Citroen denies that he has any intention of building racing cars. "Production is too urgent to allow of time for anything else," says the French manufacturer.

Canada Exported 6352 Vehicles in September

WASHINGTON, Nov. 5—Reports received by the Automotive Division of the Department of Commerce show that 8074 American car assemblies were made abroad during September, bringing the total assemblies overseas to 6123 for the first eight months of 1923.

The Canadian exports for the month amounted to 5095 cars and 1257 trucks, making the September grand total of 26,117 for the United States and Canada. Estimates give 7.7 as the per cent of exports to the combined production for September, 1923.

Exports for September, however, were slightly less than the average for the first nine months of the year, which is given as 8 per cent. American car assemblies in foreign countries decreased during the month but the ratio of production increased from 7.1 in August to 7.7 per cent in September. The value of passenger car exports from the two countries increased 30 per cent over August.

The principal market for Canadian passenger cars was Australia which received 1330 cars valued at $428,014. The United Kingdom and British South Africa were the other leading markets during September. United States factories shipped 2595 passengers cars to Australia during this period.

Makers of Brake Lining to Visit Federal Bureau

WASHINGTON, Nov. 7—Brake lining manufacturers will be guests of the Government on Wednesday, Nov. 21, when they will visit the Bureau of Standards to hear addresses on timely subjects and inspect the new apparatus that has been designed for testing brake lining.

Addresses will be made by George K. Burgess, director of the bureau; S. von Ammon, mechanical engineer, and William S. James, physicist. There will be several demonstrations of the new inventions. Following this the regular monthly meeting of the Asbestos Brake Lining Association will be held.

Detroit Railway Begins Work on Door Delivery

DETROIT, Nov. 7—The Detroit United Railway has applied for permission to operate a motor truck line from Jackson to Hillsdale, Sturgis and Coldwater, thus connecting up its railway freight terminals at Jackson with the outlying communities as a beginning for its plan for a combination railway and truck freight service in all the territory it serves.

In making its application the company is backed by a petition of the Detroit Wholesalers Association, which declares this shipping method would reduce time of deliveries between Detroit and Sturgis from seven to two days.

As outlined to the commission, the railway company indicates that it would take shipments from Detroit in demountable containers by railway to Jackson, there transhipping the containers to its trucks, which would complete the delivery to destination.

WILL MAKE CLINTON TRUCK

READING, PA., Nov. 7—The Clinton Motors Corp. is the successor to the Schwartz Motor Truck Corp. of this city. It will manufacture Clinton trucks in sizes from 1 to 7 tons. A. E. Hoffman is president and treasurer of the new Clinton company, while J. H. Baynes, who has been associated with Hoffman for nine years, is vice-president.

SALON TO OPEN NOVEMBER 11

NEW YORK, Nov. 5—Following the Astor Hotel show of imported cars, which is being held this week, the nineteenth annual Automobile Salon will open in the Commodore Hotel Nov. 11.

Milk Shipper Favors State Truck Control

President of Federation Declares Adequate Regulation Is Necessary

PITTSBURGH, Nov. 8—Motor trucking came in for considerable attention at today's meeting of the National Milk Producers' Federation. Chief of the speakers on the subject was Judge John D. Miller, president of the federation, who talked on "Control of Motor Trucking," taking a view that such control should be vested in the State.

In part Judge Miller said:

There is not an unanimity of opinion as to the proper extent of such control, some holding that the State should regulate both rates and service; others holding that the State should regulate rates, leaving open the broadest opportunity for competition in service. Still others urge that no regulation of either rates or service is necessary in that the public highways, being open to all, unduly high rates will be prevented by economic checks which are more effective than legal checks.

Beyond question care should be exercised to prevent motor truck common carriers from crowding out present carriers, unless the motor truck companies thus engaged give adequate security for continuous service, and it is believed that the consensus of opinion is that only by adequate regulation can continuity of service be assured.

If we correctly interpret the thought of a majority of those who have investigated this subject, there should be no regulation of private carriers by public utilities commissions, but rather there should be the widest opportunity for private carriers to contract with one or many for transportation of property. Nor should there be any legislation which would result in broadening the definition of common carrier and thus bring private carriers under such control. All control of private carriers can be exercised by the State under its police power and through its control of the highways.

Committee Recommended

The problem of control of motor trucking is so complex that it is believed that sufficient information has not yet been obtained to justify conclusions, and it is recommended that the Federation create a committee to gather information and report its findings of facts and recommendations to the board of directors.

Other speakers included G. R. Rice, secretary of the Milk Producers' Association of Milwaukee, and H. D. Allebach, president of the Interstate Milk Producers' Association supplying Philadelphia.

YELLOW CAB IN MONTREAL

MONTREAL, Nov. 7—The Yellow Cab Manufacturing Co. will locate a factory in this city for the manufacture of Yellow cabs from Canadian material and with Canadian labor. Yellow Cab service now is in operation in Montreal, Ottawa, Toronto, Vancouver, Hamilton, Victoria and Windsor. Local sales offices for Empire distribution will be opened.

Locomobile Equipped with 4-Wheel Brakes

Modeled After Isotta Type and Shown at Foreign Automotive Salon

NEW YORK, Nov. 5 — Four-wheel brakes on numerous foreign as well as some American chassis, one supercharger, on the Mercedes chassis, and an eight-in-line Knight engine on a Panhard chassis are among the mechanical items which are attracting considerable attention at the exhibition of the Foreign Automotive Association which opened at the Hotel Astor today. In addition to the chassis refinements there are numerous novelties in body construction which are a triumph of the body builders' art.

Extra Charge Made

Of particular interest to American manufacturers is a four-wheel braking system on the latest edition of Locomobile chassis. This is modeled after the Isotta type, so far as general arrangement is concerned. It is fitted to a specially designed front axle so formed as to inclose completely the camshafts and cam mechanism. This braking equipment is applied at an extra charge of $350 on a new chassis and can be fitted to recent models now in use at a charge of $450, the latter price including a new axle center.

Front brakes on the Locomobile are of the expanding type and are fully equalized. They are designed in such a way as to be effective without regard to the position of the front wheels. Front brakes are operated by a pedal simultaneously with the contracting brake bands on the outer rear wheel drums.

Hand brakes are expanding shoe type and act on the inner of the two drums on each rear wheel as heretofore. There are thus a total of six drums for the three pairs of brakes. Front wheel drums are of high carbon cast steel with external cooling ribs. Total area of braking surface of the foot operated brakes is given as 562 sq. in.

Other American cars exhibited, chiefly by custom body builders, include Marmon, Duesenberg and Brewster upon which no changes of importance were in evidence. None of the Marmon chassis shown had front wheel brakes.

Supercharger on Mercedes

Mercedes had the only chassis employing a supercharger. This is applied to 3 3/16 x 5⅛ in. four-cylinder engine and is driven off the front end of the crankshaft. Cylinders are of steel made up in a single block instead of pairs as is the case with the six-cylinder model. Bodies on the Mercedes chassis include a sport sedan and town landaulet by Brewster and a phaeton German design and manufacture. This is a cream colored job trimmed in tan leather resembling pig skin.

Another German car shown is the Steiger, fitted with an eight-valve four-cylinder engine and imported bodies. Fiat is showing its two smaller chassis equipped with Italian bodies and artillery type steel wheels. Rolls-Royce and Lanchester, fitted with Locke and Brewster bodies, respectively, are the only English jobs in evidence.

Belgium is represented by Minerva with body lines characterized by long narrow hood having a raised portion carrying the continuation of the belt line to convergence in graceful curves which come together at the radiator. Isotta is showing its eight-in-line chassis. The hood on this model has adjustable ventilating doors in place of louvres.

Practically all the other cars not mentioned above are French products, many of which are fitted also with graceful, if somewhat striking, French built bodies. One of these is the Voisin with body streamlined to facilitate high speed. Fenders are V-shaped in section.

A cast aluminum muffler divided horizontally with two sections bolted together is an unusual feature of one Voisin chassis which is said to have a duplicate of the engine used in the car which won the French grand prix. French bodies on Voisin chassis include what are said to be duplicates of the coupé-limousine used by President Millerand of France and a small coupé sold to the Queen of Spain.

Exhibits by Renault

Renault shows several models varying from the large six to a diminutive chassis rated at 6 hp. and fitted with a body resembling the old hansom cab. The latter seats two persons in the closed cab compartment and has a seat for the chauffeur in an open space between the dash and the front panel of the inclosure. A single door forming part of the front panel opens forward.

Other French cars exhibited include the Hotchkiss and the Panhard. The latter is believed to be the first eight-in-line Knight engine to be shown in this country. One Panhard chassis has front brakes operated by cable and the second a set operated by rods or tubes with ball joints similar in design and almost the same size as the drag links in conventional chassis.

Martin Conboy Appointed Walker Motors Receiver

NEW YORK, Nov. 5—Following the appointment of Martin Conboy as receiver, Walker Motors, Inc., this city, has filed a statement showing liabilities of $144,876 and claimed assets amounting to $323,791.

A meeting of creditors will be held shortly when a trustee will be appointed to wind up the affairs of the company, it is stated.

Walker Motors has been doing a service business largely, and what few trucks it turned out were manufactured in Elmira Heights, N. Y. The company is reported to have been inactive for some time.

G. M. C. Units Broke Records in October

Cars Made and Sold Aggregate 87,500—Production to Be Lighter This Month

NEW YORK, Nov. 7—General Motors units broke all of their own production records in October when they turned out approximately 87,500 cars, their various schedules calling for 91,000.

Of this total Chevrolet produced 56,283 cars and trucks in the American and Canadian plants as compared with 42,972 in September and 46,438 in August.

The Buick Motor Co. set a new mark for itself by turning out 23,119 in the Flint and Detroit plants. This was a daily average for the twenty-five working days of nearly 925 cars. The largest daily production in the company's history was reached Monday, Oct. 29, when 1050 cars were manufactured.

November will not be so large a month because of Chevrolet taking its annual inventory, while in December Buick will do likewise. However, in January General Motors plans to produce about 88,000.

President Sloan's Statement

Discussing current conditions in the automobile industry as reflected by the operations, President Alfred P. Sloan, Jr., says:

Believing that any actual facts tending to throw light on current business conditions will be helpful, it may be interesting to point out that General Motors schedule for October was approximately 91,000 cars. Preliminary reports indicate that we manufactured and sold about 87,500. Cars on hand on our account stood at 18,986 as of Nov. 1, an increase of 3449 as compared with Oct. 1. Reports from our dealers as of Nov. 1 are not yet available; we believe, however, that the stock in the field increased somewhat but this is usual at this time of the year, especially on the various open models.

This performance constitutes a record for General Motors operations, the next largest month being May of this year, during which month we manufactured and sold 75,000 cars. The comparison is all the more interesting in view of the fact that normally production is much lower at this time of the year than in the Spring months.

Our largest quantity producer—Chevrolet—takes inventory in November and its schedules are necessarily much reduced in consequence. Buick takes inventory in December and the balance of our car divisions, in either one or the other of these two months, hence our schedules are reduced in consequence.

Our confidence in the future might be expressed in the statement that we are scheduling materials with a view to producing approximately 88,000 cars in January.

NEW FORD OUTPUT RECORDS

DETROIT, Nov. 7—Ford Motor Co. production for the week ending Oct. 13 established two new records, the cars and trucks for domestic plants reaching 42,271, an increase of 502 over the week of Sept. 25, and Lincoln output reaching 223, the highest to date.

Commercial Airplane Discussed by Stout

He Says Economic Laws Will Be Basis for Establishment of Aviation

DETROIT, Nov. 7—The meeting of the Detroit Section of the Society of Automotive Engineers was featured by a talk on the commercial airplane by William B. Stout.

Stout pointed out that the most successful commercial air service in the world was to be found in the air mail service of this country. In four years' operation this service has maintained an average of 96.7 per cent on-time deliveries. The central section between Chicago and Omaha has just completed 106 weeks of 100 per cent service without an accident or forced landing throughout the period.

Plane and Ship Difference

During the course of his talk, Stout demonstrated the fundamentally different characteristics of the airplane and airship. The former varies in lifting power, roughly as the square of its dimensions and in weight as the cube of the same dimensions. The capacity of the latter type varies as the cube of its dimensions and in surface as the square of these dimensions.

The natural outcome of these laws will bring about the construction and operation of very large airships, which will be owned on much the same basis as steamship lines and railroads with nonstop trans-continental or round-the-world trips perfectly feasible. On the recent trip of the ZR-1 from New York to St. Louis, Chicago and return, the fuel cost per passenger, based upon 100 passengers, which figure is easily within the capacity of the ship, was $3.20.

Due to its inherent characteristics, the airplane presents problems which are more difficult of commercial solution. In the first place the military plane is totally unfitted for commercial work as the ratio of maintenance time is inordinately large as compared with the flight time. Nevertheless, great advances have been made in constructional details decreasing parasitic resistance and increasing the effective lift for a given thrust or drift.

Subsidy Not Big Factor

The outstanding feature of Stout's talk was his statement that Government subsidy will not establish commercial aviation, that commercial aviation like every other form of industry or transportation will be founded on economic laws. When a type of plane is developed that will dependably perform a transportation operation at a reasonable price, the way for commercial airplane service will be open.

In his opinion, this plane should be constructed so that it will have the ability to fly twenty hours out of twenty-four with a minimum of maintenance cost. He also emphasized the idea of encouraging junior aviation clubs and societies, as the problem of aviation is one of tomorrow and the greatest progress and success will be attained by this encouragement. He stated that some of the foremost aviation exponents of the present day had graduated from these junior societies.

Stout maintains that it is no more reasonable to place the engine, radiator, etc., outside the fuselage of a plane than to place the engine and controls of the motorboat outside of the hull in the water. He concluded his talk by a description of the thick-wing metallic planes which he has developed for commercial purposes.

These planes are built largely of duralumin, having a corrugated metallic skin that reinforces the structural members. One monoplane of this type carrying four people has been in successful operation for several months. Another larger monoplane of approximately eight-passenger capacity is now under construction. As equipped with a Liberty engine, this plane will have an effective capacity of lift of one ton.

Following the meeting, about sixty members of the society made an informal visit to Stout's laboratory, being given the opportunity to inspect one of the present planes and examine the structure of the larger plane, which is in course of construction. Great interest was shown in the light duralumin structural members, general surprise being evinced at the tremendous load capacity and rigidity of the riveted box sections in view of the very light weight.

First Show in Uruguay to Be Held in December

MONTEVIDEO, URUGUAY, Oct. 19 (*by mail*) — The first automobile show in Uruguay will be held here the ten days commencing Dec. 1, the buildings of the Rural Society having been chosen for the purpose. Indications are that about twenty exhibitors will display about seventy passenger cars, in addition to truck, accessory, tractor and tire lines. Two buildings are available for the show, one of which will be devoted to passenger cars and the second to the allied lines.

The show is being arranged as a cooperative event and in order to stimulate interest in this first event of its kind here the cost of the space has been kept at a low figure. It is understood that several special models will be brought over from the annual Argentine show, which is held in Buenos Aires during November.

SOUTHLAND IN NEW PLANT

NASHVILLE, TENN., Nov. 6—The Southland Motor & Body Corp. of Nashville has completed its plant here and is in production, manufacturing several types of automobile and truck bodies and cabs for the Ford, Chevrolet, Overland and Star chassis. The company has been in operation for some years.

Wisconsin Tax Law Held Constitutional

Transportation Commission Claimed Discrimination Against Motor Trucks

MILWAUKEE, Nov. 5—The new Wisconsin weight tax law was held constitutional by a decision of the State Supreme Court, handed down in an original emergency action brought to test the legality of the enactment by the Wisconsin Transportation Association, so that the issue might be determined promptly and enable the Secretary of State, as registry officer, to prepare for administering the law.

With respect to motor trucks and other commercial vehicles, the new law went into effect July 1, but on passenger cars for private use it will not become effective until Jan. 1. This apparent discrimination was the main basis of the test suit. While about 3000 commercial cars actually have re-registered, more than 10,000 have been withheld pending the outcome of the suit. The State will begin an immediate check to enforce the law.

Claim Second Fee Is Needed

Besides claiming discrimination as to the date of effect, the Transportation association held that the law was not valid because it forced truck owners to pay a second fee for a year for which they already had been licensed under the old law, which licenses are for one year, beginning Jan. 1.

The Supreme Court merely handed down a memorandum and will present its complete decision later. It sustains the State attorney's demurrer to the complaint and expressly says the law is valid.

Roughly, the new law imposes a fee on motor trucks which is equivalent to twice that of a passenger car of the same weight, while the motor bus license costs about three times as much on the average, as, besides weight, the passenger capacity determines the fee. Passenger car fees will range from $10 for a Ford to $20 for a Pierce-Arrow. Double-deck buses will have to pay nearly $300 a year to the State, besides fees required by local ordinances.

Creditors of Weidely Must File Before Dec. 3

INDIANAPOLIS, Nov. 5—Creditors of the Weidely Motors Co. are directed by an order of Judge Harry O. Chamberlin of the Circuit Court in Indianapolis to file their claims on or before Dec. 3. Any creditor failing to file claims by that time will be barred from sharing in the assets of the receivership.

The receiver, William H. Fletcher, was appointed following a suit filed against the company by William A. Umphrey on July 27.

Men of the Industry and What They Are Doing

Resignation of Radoye

Gilbert U. Radoye has resigned as sales and advertising director of the Haynes Automobile Co. after five years' association with the Kokomo concern. As yet he has not announced his future plans. Prior to joining Haynes, Radoye was identified with the Marmon and Packard organizations.

Sparks Returns from Europe

William Sparks, vice-president and general manager of the Sparks-Withington Co. of Jackson, Mich., returned from Europe on the Leviathan after spending two months abroad, in connection with the plant now manufacturing Sparton horns in England as well as the Sparks-Withington interests in Italy and France.

O'Neil and Picard Sail

W. L. O'Neil, vice-president of the Stromberg Carbureter Co. of Chicago, and A. J. Picard, New York manager, have sailed for England to investigate conditions and determine the advisability of establishing a branch carbureter factory in that country.

C. M. Bonnell Resigns

C. M. Bonnell has resigned as general sales manager of the Torrington Co., Torrington, Conn., effective Dec. 31. Bonnell has been associated with the John F. Alvord interests for several years, and prior to that served as sales manager of the Edison lamp automobile sales department for fourteen years. He managed Splitdorf sales for several years.

Olsen Sales Head for Tuthill

R. A. Olsen has been appointed sales manager of the Tuthill Spring Co. of Chicago, succeeding H. C. Wright. Olsen will continue to have charge of advertising in addition to his other duties. G. M. Youngkrantz has been added to the Chicago sales staff and probably will look after the jobbing trade of the West, North and Central territory.

Steel Products Names Clegg

Lee M. Clegg has been made sales manager of the Steel Products Co. of Cleveland and Detroit. He moves up from the position of assistant sales manager under J. A. Krider, secretary and treasurer of the company. Previously he handled the Eastern territory.

Renshaw Trade Commissioner

Donald Renshaw of New Orleans, formerly a sales executive in the automobile trade, has been appointed assistant trade commissioner at Calcutta, India. The Department of Commerce announced that he will give special attention to the Indian markets for automotive products. Renshaw has been with the Ford Motor Co. as sales manager and assistant branch manager. He was president and general manager of the Renshaw Motor Co., distributor of tractors and agricultural implements.

Abbott Represents Federal

Charles A. Abbott has been appointed special representative of the National Sales Division of the Federal Motor Truck Co. and will direct the sale of Federal trucks in the Eastern division. Abbott has been affiliated with the White Co. for the last fourteen years and is widely known in the motor transportation field. His headquarters will be in New York.

O'Donnell with Biflex

Edward C. O'Donnell has been appointed assistant to Willard E. Ericson, sales manager of the Biflex Corp., manufacturer of Biflex bumpers and other products. "Eddie" O'Donnell, as he is familiarly known in the trade, was assistant to the director of the Automotive Equipment Association's merchandising campaign during the incumbency of Ray W. Sherman as merchandising director.

Will Plan Aviation Publicity

H. A. Bruno and R. R. Blythe have formed H. A. Bruno & Associates, with offices at 210 West Forty-fourth Street, New York City, to plan and execute publicity campaigns for concerns in the aviation industry. They start with three accounts — the Netherlands Aircraft Manufacturing Co.,. representing Anthony H. G. Fokker; the Fairchild Aerial Camera Corp. and the Skywriting Corp. of America.

Changes with Campbell-Ewald

John B. Woodruff has been appointed art director of the Campbell-Ewald Co., the advertising agency. A. J. Feinberg has been chosen associate director in the art department, while the sales promotion department has been enlarged by the addition of Peyton B. Lyon, formerly connected with a Brooklyn daily newspaper.

Bank President Named as Receiver for Pilot

RICHMOND, IND., Nov. 7—Judge W. A. Bond of the Wayne County Circuit Court has appointed Charles W. Jordan, president of the American Savings & Trust Co. of this city, receiver of the Pilot Motor Car Co.

The action was taken on the petition of four stockholders who declared that, while the assets actually were in excess of liabilities, they thought a receiver necessary so that current bills could be paid.

Factory Executives Hear Used Car Plan

After Meeting They Say They Believe Motomarts Should Be Given Trial

DETROIT, Nov. 7—Executives of many factories in this district attended the meeting of the Detroit Automobile Dealers Association last night, at which James E. Appleby of Percy Chamberlain Associates, Inc., outlined the Appleby used car plan and its operation. It was probably the largest meeting on the Appleby plan that has been held and also was the most important, as it was the first time that special effort was made to acquaint factory men with its workings.

The dealers of Detroit and nearby cities made up the largest part of the audience. It was expected that the presence of factory sales executives would lead to many questions on detail workings, but there were fewer questions asked than at any meeting yet held. Opinions from factory men indicated that they believed the Appleby plan worthy of thorough trial.

New Car Sales Unhampered

Throughout his talk Appleby emphasized that the operation of the Appleby plan would not interfere with new car sales, but, on the contrary, experience on the Coast has shown it to increase them. This is accomplished principally through leaving the dealers entirely free to sell new cars. By building up a spirit of confidence in the Motomarts, used car buying has been stimulated to a point where it parallels the movement of new cars, Appleby stated.

One of the most important factors in aiding the marts sell used cars, Appleby said, is the fact that economies in operation make it possible to sell at lower prices than in cases where individual dealer used car salesrooms are maintained. To emphasize the importance of price in low priced car or used car sales, he said, Henry Ford has declared that the recent small price cut in Ford cars will result in 300,000 new buyers. Used car sales are slow today, he declared, because dealers have to try to get too high prices.

5-Passenger Brougham Produced by Peerless

CLEVELAND, Nov. 7—The new town brougham of the Peerless Motor Car Co. carries five passengers.

In equipment, finish and appointments the body is similar to the town sedan. There are four doors, all extra wide to allow easy entrance and exit.

No New Marks Made on Barcelona Track

Speedway Just Opened and Drivers Were Unable to Get Much Practice

PARIS, Oct. 30 (*by mail*)—Albert Divo, driving the six-cylinder 122-cu. in. Sunbeam, which won the French Grand Prix, averaged 88.7 m.p.h. in the 248½ miles race constituting the opening meeting of the Sitges speedway, near Barcelona, his time being 2 hrs. 48 min. 8 sec.

The French driver of the British car defeated Zborowski, on his eight-cylinder Miller, by the narrow margin of 50 seconds, when the American car was forced to stop fifteen miles from the end for a tire change. This does not equal the record on Monza track.

The race united only four starters: The two Sunbeams driven by Dario Resta and Divo, Count Zborowski's Miller and an Italian Diatto and to avoid disappointing the public 91-cu. in. racing cars were allowed to start at the same time. Much publicity had been given to Murphy and De Alzaga as starters on Miller cars, but these two did not enter.

All the competition lay between the Sunbeam and the Miller. The American car kept a slight lead up to half distance, lost it after stopping for gas, regained it and set up a record lap, and then lost it again when it was necessary to come in ten laps from the end for a tire change.

The Sitges track, known as the Spanish National Speedway, has been built by a group of Spanish sportsmen and is an armored concrete construction 1.24 miles round, 59 feet width and banked for a theoretical speed of 125 m.p.h. Having been finished just before the opening race, drivers had had little practice and did not get the best speed out of their cars, as is shown by the fact that the average for the first half of the race was lower than for the total distance.

Resta Wins Race

NEW YORK, Nov. 5—A cablegram from Barcelona states that Dario Resta, driving a Sunbeam, won the 600-kilometer small car race on the Sitges speedway Saturday, driving the distance in 4 hrs. 22 min., beating his teammate, Divo, by 12 seconds.

OVERLAND GETS STORAGE ROOM

TOLEDO, Nov. 5—The Willys-Overland Co. has leased the major portion of the old Milburn wagon plant here, purchased about a year ago by the General Motors Corp., for the purpose of storing winter production. The Martin Parry Corp. occupies part of the structure with an assembly plant. The entire building now has been leased.

HUGO SCHERER DEAD

DETROIT, Nov. 7—Hugo Scherer, president of H. Scherer & Co., manufacturer of weatherproof fabric and artificial leather, died suddenly this week at his home in Grosse Pointe Farms. The business, one of the largest of its kind, was an outgrowth of the carriage industry, changing with the advent of the automobile to an important supplier in the new industry. Mr. Scherer was also president of Detroit Forging, St. Clair-Athol rubber, and an officer and director in other companies and banking institutions.

Makers Will Begin Stocking Dealers

(*Continued from page* 968)

Studebaker also will operate at about this figure in keeping with the production policy that it has announced for the fourth quarter.

Oakland and Olds are continuing the shipments of their new models at approximately 200 daily and report orders from dealers to be in excess of output, especially on closed models. Hupp production of approximately 125 daily is reported under dealer requirements and will be increased. Manufacturing changes at the Hudson-Essex and Paige-Jewett factories will reduce production during the month. Maxwell-Chalmers is keeping upward of the 200 daily mark in production.

Reo is continuing its output of 150 daily in cars and speedwagons. Dort is shipping its new models at the rate of about seventy daily and expects to increase this. Rickenbacker production is holding close to the fifty daily mark and will be stepped up as the plant additions are completed. Columbia reports shipments of about thirty daily in its Columbia and Liberty models.

In the higher priced lines Cadillac is continuing shipments at close to the 100 daily figure, and Packard is also operating at close to this figure. Lincoln is showing steady increases and is now close to a forty a day basis. Wills Sainte Claire is showing a steady output of about 300 monthly.

Only Normal Decline Expected This Month

(*Continued from page* 968)

ing to govern output. The demand for motor buses, due to the opening of new lines and the extension of others, is keeping schedules in truck plants at a good point. It has not been expected that truck production would show pronounced gains at any time but that the increase would be along conservative lines.

The Southeasern section of the country reports an unusual number of sales of tractors and predicts a continuance of good business the remainder of the year. Cotton prices have proved an important factor in opening up this market for the sale of products of the industry.

N. A. C. C. Creates Safety Committee

George M. Graham Heads It with Other Four Members Yet to Be Appointed

NEW YORK, Nov. 7—Directors of the National Automobile Chamber of Commerce at their monthly meeting today created the Traffic Planning and Safety Committee and appointed George M. Graham of the Chandler Motor Car Co. chairman. The names of the other four members of the committee have not yet been announced.

As outlined, the scope of this new standing committee is to promote safety on the highways, to work for the improved regulation of motor traffic and to study and emphasize the relation of motor transport to city planning.

Graham Maps Out Campaign

Graham will get into action as soon as his committee is completed. Already he has mapped out a formidable campaign, chief of which will be a survey of major traffic, which will include the adoption of a method of procedure in working for safer traffic, based on experience of cities.

Safety education will be encouraged in the schools, among motorists and pedestrians, and motorists will be told the fundamentals of driving. Law enforcement also will be given careful attention.

In the way of motor transport and city planning, the committee will consider the elimination of grade crossings in cities, the possibilities of over-passes or under-passes for pedestrians or vehicles and the possibilities of decentralization.

In its work in the elimination of accidents in rural districts, where the least progress is being made, the interest of granges and county agents will be enlisted.

It has been suggested that the committee stage a city-planning conference, but nothing definite as to this has been arrived at in the preliminary program.

Receive Trade Reports

Other than this committee appointment, the directors discussed only routine matters and listened to reports on trade conditions. In connection with the appointment of the Graham committee they were informed that five cities are reducing their motor accident records as compared with last year, though the general trend is toward an increase. Cities which report decreases are Boston, Chicago, St. Louis, Seattle and Fargo, N. D.

As to general trade conditions the reports showed that the demand for closed cars is the mainstay of production. The increase of October over September is spread over various price classes. Trade conditions, however, are spotty, the reports said.

NORMAL LEVEL IS REACHED IN WEST

Seattle

SEATTLE, WASH., Nov. 5—The usual slowing down is being encountered by dealers in this city and State, although October sales of this year are slightly above those of October, 1922. Compared with the spirited sales so marked in summer months, dealers find themselves well stocked with cars, and the average dealer is buying only enough to carry him over until the first of the year. Few are stocking for spring, and many dealers feel that an acute shortage of cars next year is not something to worry about.

Some dealers report that prospects have held off because of recent reductions in prices, as they feel that some additional cuts might be made, regardless of announcements to the contrary.

Used cars are not moving as rapidly as in previous months, but this, too, is no more pronounced than the usual at this period.

The demand for trucks continues satisfactory, due to general activity in lumbering and some leading industries. Spot orders for trucks to be used in emergency work in devastated Japan are about through, although large numbers of automobiles and trucks are being shipped from the East to this port for loading on Japanese bound steamers. Japan, however, is buying through the eastern factories.

San Francisco

SAN FRANCISCO, Nov. 5—Lower priced new cars and comparatively high priced used cars moved rapidly during October in northern California, but the demand for cars priced from $1,500 up hardly exceeded that of the same month last year. On this account dealers here are not stocking so heavily for spring sales as they have been doing in years past.

Since Oct. 1 there has been a steadily increasing demand for rebuilt cars at prices from $800 to $1,500 for cash. Buyers of new cars are demanding smaller first payments and longer time on deferred payments, and the dealers who have extended the time on their new cars from the former twelve months to eighteen months have found that their sales have increased.

Truck demand has been low for the last thirty days, but used trucks have been moving out so fast that there are none in good condition in the used car markets, and very few in the hands of dealers in new trucks.

Los Angeles

LOS ANGELES, Nov. 5—Whatever reduction there may be in the number of sales of motor vehicles in southern California for October, as compared with September, will be due more to the inability of dealers to make deliveries.

Los Angeles distributors have been bombarding the factories with telegrams almost daily in order to get shipments. One distributor representing two popular lines in the middle priced class visited several eastern automobile centers and bought cars from dealers at those points and shipped them here.

Some dealers acknowledge there is a slight falling off in the demand now and attribute this chiefly to the fact that the annual show will be held soon, and it has become the custom with prospective buyers to wait for shows in the expectation of seeing new models.

New car sales are being registered at the rate of about 250 daily. One distributor has been notified by his factory that he will get no shipments in December.

There is no such thing as stocking for spring delivery as dealers in the more popular makes are unable to fill orders on hand.

Indianapolis

INDIANAPOLIS, Nov. 5—Although the total volume of November business in new cars for Indiana will be considerably lower than for September or October, a number of the quantity distributors expect as large sales during November as in September and better in some cases than during October.

Warm weather of the past month has delayed closed car business, but a considerable increase along this line is indicated by prospect lists and business already partly lined up. State business has been far better than was expected, but in some cases Indianapolis sales for October were less than during the preceding month.

Industrial slowness in the city has helped to slow up local sales, but in many quarters in the higher priced class of cars this is being overcome.

St. Louis

ST. LOUIS, Nov. 5—Demand for cars is normal now with the closed models receiving the greatest attention. Dealers have on hand fewer used cars by 20 per cent than were in stock at this time last year.

Dealers are not stocking up with cars in anticipation of spring business, but are taking only what they need for present deliveries. Factory deliveries are better, and there are fewer orders on hand on which dealers are unable to make delivery than there were a month ago.

Collections are described as good with a minimum of repossessions due to failure of buyers to pay their notes.

There is a cheerful atmosphere among the trade here as to the prospects for winter business, and with sales being maintained at a reasonable level, the feeling is general that the winter season will be good.

Columbus

COLUMBUS, OHIO, Nov. 5—October was a fair month with respect to automobile sales in Columbus and central Ohio territory. While sales were not as large as in some previous months, still trade is generally satisfactory and distributors and dealers are well satisfied with conditions.

All unite in saying that the outlook for business during the winter months is good and that they expect to be fairly busy during the remaining months of the year.

Lower priced models have played havoc with the used car market, but on the whole the situation is good and inventories of used cars are not extra heavy for the time of the year. In fact, many trade-ins are reported.

Dealers in the higher priced lines have only small stocks. Those handling cars ranging from $1,200 to $2,500 are fairly well stocked up, but they are showing no anxiety over the future. In the lower priced lines there is no especial accumulation of stocks in warehouses.

Dealers having country connections report a better feeling in agricultural sections, due to the fact that the corn crop is good and prices are satisfactory. A better demand for passenger cars is expected from all sections outside of the urban centers.

Detroit

DETROIT, Nov. 5—Detroit dealers sold and delivered 4692 cars during October, as compared with 2989 in October, last year, and sold 581 trucks, both light and heavy duty, as compared with 356 in the same month of last year. By far the largest percentage of gain in car deliveries was in closed models, indicating not so much that business is at least one-third better than last year, but that dealers are getting closed car deliveries this year, where they could not get them in 1922.

November sales are expected to run at least 25 per cent better than last year, on the basis of the general business of the year to date.

The one severe restraining influence to good November selling is the used car situation, which is admittedly much worse than last year. Unless a good volume of used car buying can be obtained, it is likely dealers will refuse to accept further trades. There are several dealers now who are practically unable to do business because of used car stocks.

Stocks of new cars in dealers' hands are limited to open models, and only an ordinary volume of these. There are no closed cars in stock, and dealers in the standard lines are able to sell as many of these models as their used car condition will permit.

The State situation is much like that in Detroit.

EAST REPORTS SLACKENING OF SALES

Boston

BOSTON, Nov. 5—Motor car sales have slowed up perceptibly in Boston in the last two weeks. October opened fairly well and continued so for a couple of weeks, and then sales began to ease up. One of the real barometers is the fact that some of the companies during the last few weeks have had to repossess cars sold on partial payments during the summer.

One dealer in a popular priced make had to take back seven, and the fact that it was a greater number than he had repossessed in a period of more than two years made him sit up and take notice. It means some other dealers are forced to do this, too, which adds so many more cars to those taken in trade. That being so, the condition of some of the smaller dealers throughout New England will not be very rosy during the winter.

Some dealers report that their sales, while slowing up, are not uneven. They say that their fall average will be good because of what preceded late October and early November. Some dealers could sell more closed models if they had them.

Buffalo

BUFFALO, Nov. 5—Buffalo dealers expect that business during November and December will be forty per cent less than during September and October. In September and October it was twenty-five per cent less than during the corresponding months of last year.

There is little, if any, demand for open cars. Dealers handling the more popular makes are unable to deliver certain styles of closed cars at the time of sale. Those representing companies whose products are in less demand are experiencing no difficulty in making deliveries.

Many dealers are storing cars for spring, including open and closed models. One firm is said to have put 500 closed cars in storage in the last week. There is much complaint from dealers on the policies of factories that are turning out more cars than the market will absorb and foisting these on dealers.

The used car market here is unsatisfactory. Its lack of life is attributed in part to the unusually mild weather here this fall. If Buffalo would get a good cold snap it would bring about a demand for closed used cars, dealers believe.

Philadelphia

PHILADELPHIA, Nov. 5—There are at present fewer cars in the storage warehouses in this territory than there have been in the last few years.

Some dealers express surprise that there has been so little slowing up at this time of year. There is little or no difficulty in obtaining deliveries on wanted models and this, together with the fact that there is no oversupply to clear out of stock, makes a particularly satisfactory condition as the annual automobile show approaches, which never fails to impart an added stimulus.

Employment is good and the public apparently has sufficient money to buy cars and make replacements of old models. Numerous inquiries received from prospective buyers at this time point to an increased demand over last year for passenger cars for winter use. Closed cars, naturally, are in greatest request at this time. Purchasers' insistence upon prompt deliveries is ascribed as one reason for clean stocks. Collections continue to be good and are reported to be better than a year ago.

Truck sales are not so satisfactory as those of passenger cars.

Dallas

DALLAS, TEX., Nov. 5—Actual retail sales of automobiles in Dallas during October were greater than for any other month in more than a year, according to reports from a dozen dealers.

The financial situation in Texas is better than it has been in six years. There is plenty of money in the banks, plenty in the rural districts, and the farmers have about paid off debts of years' standing. The farmers are buying automobiles and trucks from the money they made this year.

The used car business in Dallas has been exceptionally good.

Texas dealers are buying new cars heavily, but not with a view of stocking up. Some dealers report they have sales made for cars which cannot be delivered by the factory in six weeks.

Cincinnati

CINCINNATI, Nov. 5—Retail automobile sales in this vicinity during October were slightly above the average for October in recent years, with every prospect for continued prosperity.

One local condition, however, which is causing widespread concern among the trade is a proposed ordinance to be voted on at the November municipal election, which would make it compulsory upon all owners of cars operated in Cincinnati to equip them with a speed-controlling device.

Dealers fear that should the measure pass, so many automobile owners would dispose of their cars that it would cause a serious drop in the primary car market.

Except for this contingency, prospects for business in both the new and the used-car field, for all models and in all price ranges, are bright. Money is relatively free, and the credit situation has improved. The first cold wave has already stimulated the sale of closed cars.

Chicago

CHICAGO, Nov. 5—Automobile sales in Chicago in October were considerably larger than in September, the increase being due largely to the demand for closed cars.

Many of the dealers handling popular lines are again encountering a shortage of closed cars for immediate delivery, while others are just about keeping even with orders. There is practically no stocking of cars by dealers beyond their seasonal needs.

Reports of some of the large automobile financing concerns show October business running in the neighborhood of 10 per cent greater than September business, and as much as 15 per cent greater than October, last year. Some of these firms report the proportion of cars sold on time showing a slight increase.

The used car market is very dull except for the closed vehicles in fairly late models, which are in good demand. Prices of used cars are unusually low, and open models find very little demand even at prices which would have been considered impossible a few months ago.

Dealers are expecting a continuance of business on about the present level until the first of the year, and they look forward to an increase immediately after the show season.

Milwaukee

MILWAUKEE, Nov. 5—"Just a seasonal slackening, but not as severe as in past years," is the majority report of Milwaukee dealers at the beginning of November. While a number of dealers are still from fifteen to thirty days behind on deliveries, this applies mainly to closed types and special jobs, and, in the main, immediate delivery can be made by nearly every salesroom in this city.

The manner in which sales have been maintained is considered nothing short of remarkable. October business, on a broad average, ran 75 per cent ahead of the same month a year ago, although the amount of cash involved was considerably less, owing to the reductions in prices that have been effected by most makers since a year ago.

Country trade is holding up very well, according to local distributors. Instead of laying off salesmen, most dealers actually are adding men.

Dealers are getting good results from an aggressive effort to erase seasonal barriers in selling.

Dealers say that they have not yet started accumulating stocks for spring business, as practically everything coming from factories is going into buyers' hands immediately. In former years many dealers were putting cars for spring into warehouses as early as Oct. 1 and 15.

South Africa Waits New Model Arrivals

Small Stock of 1923 Cars Likely to Be Cleared Out by Time They Come

JOHANNESBURG, SOUTH AFRICA, Oct. 5 (*by mail*)—South Africa is looking forward to seeing the 1924 models, and the dealers are very reticent about them. There are not many 1923 models in stock, and there is little fear that any of the dealers will have these on hand when the 1924 cars begin to arrive, but they are taking no chances.

The Oakland and Buick cars will probably be the first of the 1924 vintage to come to this country, followed by the Hupmobile and the Dodge Brothers. The latest arrivals are the Dort special model and the Gray. The former is slightly known, and the latter is quite new to us. Johannesburg has heard much about the Dort from Australia, and it seems to have a very good name there for service over country very like the one here.

Buick Meeting Held

A conference of Buick distributors from all over South Africa and Rhodesia has been held with A. Williams. General Motors representative here. The delegates discussed points relating to the sale of the 1924 model and went into such questions as the used car situation. The conference continued for the best part of a week.

The used car question seems a little easier than it was three months ago, when it caused many dealers real concern. Cars are being re-conditioned properly, after the example set by Hupp Garages, Ltd., and in some instances the demand exceeds the supply. The sale of new cars continues to be good, and there is a tendency on the part of dealers to order cars very cautiously.

Tire Trade "Jumpy"

The tire trade continues to be jumpy, and even the larger companies appear to be engaged in a price war, which is disastrous to business. The motorist has got into the habit of asking for discount on his tires, and he can get it from almost every tire dealer and garage in the country. There are still a number of the old fabric stocks to be disposed of, and when these are gone the big tire companies say they will get together and make a real effort to stabilize prices.

The motor bus movement continues to spread. New vehicles are going into service rapidly, and the public is getting to like bus travel. Fuel prices have been further reduced recently, although gasoline is still around 75 cents a gallon.

Fifty cent gasoline is the most the motorist can ever expect, and this may come about when the bulk storage plan, initiated by the British Imperial Oil Co., is in working order. Huge tanks have been erected in Durban and Johannesburg, and the South African Railways have provided tank trucks. Fuel in bulk is new to this country and will help to bring down costs considerably.

British motorcycles continue to gain in popularity, although two or three American makes are favorites in the side-car class. But the British lightweight has certainly swept the board and is doing wonderful things in competitions. Motorcycles are almost as popular in South Africa as in England, although they are looked upon more as stepping stones to a car by riders here. There will always be a good demand, however, for the motorcycle.

A good roads compaign has been started in South Africa by the "Rand Daily Mail" and "Sunday Times"—the two largest newspapers.

FINANCIAL NOTES

Mack Trucks, Inc., reports net profits for the third quarter of $1,825,770 after depreciation, Federal taxes, etc. After preferred dividends, the balance was equivalent to $5.44 a share earned on 283,108 shares of no par common as compared with a net profit of $1,205,732, or $3.25 a share in the third quarter of 1922. Total net profit for the first nine months of 1923 was $5,870,246 as compared with $2,766,564 for the same perior in 1922.

Timken Roller Bearing Co. has declared an extra dividend of 25 cents and regular quarterly 75 cents, both payable Dec. 5 to stock of record Nov. 20. Three months ago the company declared an extra dividend of 25 cents.

Stockholders Favorable to Motor Products Plan

NEW YORK, Nov. 7—Stockholders of the Motor Products Corp. at a special meeting today approved the plan for reorganization which was submitted to them. Under the plan, each share of common and Class B stock of the present company will be exchanged for a 6 per cent debenture $100 par value and one share of the preferred stock with no par value. In addition, common stockholders will receive one share of new common stock for each share now held.

Holders of the Class B stock will be called upon to surrender exclusive voting rights which they now have. The reorganized company will have outstanding 62,510 shares of preferred stock and 67,500 shares of common, without par value, and $6,750,000 twenty-year 6 per cent gold debentures.

AMERICAN PARTS BANKRUPT

TOLUCA, ILL., Nov. 5—The American Parts Co. board of directors have filed petitions in bankruptcy, listing liabilities at $69,821 and assets of $60,080. Secured claims are $35,951 and unsecured claims, $31,936. Real estate worth $36,200 is the chief item of the assets, with cash of $1.65; bills receivable of $9,475 and machinery valued at $9,450.

BANK CREDITS

Written exclusively for AUTOMOTIVE INDUSTRIES *by the Guaranty Trust Co., second largest bank in America.*

The outstanding event in the financial markets last week was the sharp rise in stock prices on Wednesday, followed by smaller gains during the following days. Commodity prices were irregular, with a slight downward tendency.

Chicago prices of wheat and corn were firm, while cotton continued to rise, reaching a new high point for the year at 32.85 cents a pound. Prices of pig iron showed a further decline.

The rise in the price of cotton was stimulated by the Government report estimating the condition of the crop at 47.8 per cent of normal on Oct. 25, as compared with 49.5 per cent on Sept. 25, and forecasting a yield of 10,248,000 bales, a decline of 767,000 bales from the previous estimate.

Daily average production of crude petroleum in the week ended Oct. 27 amounted to 2,265,900 barrels. This is 2450 barrels below the average for the preceding week, but is 120,833 barrels above the average for the month of September.

The Fisher index of wholesale commodity prices stood at 154 last week, as against 155 the week before, 155 for the month of October, and 154 for the third quarter of the year. Dun's index number was 191.844 on Nov. 1, showing a rise of ½ per cent for the past month. Failures reported to Dun's Review during October numbered 1673, an increase of 36 per cent from the September figure, but a small decline from October, last year.

Debits to individual accounts reported by the Federal Reserve Board for the week ended Oct. 31 amounted to $9,346,000,000, a gain of 1.4 per cent from the preceding week.

Discounts by Federal Reserve banks increased $47,600,000 during the week ended Oct. 31, most of the gain being in bills secured by Government obligations.

Loans of reporting member banks declined $41,000,000 during the week ended Oct. 24, loans secured by Government obligations declining $28,000,000 and "all other" loans, $21,000,000.

Call loan rates ranged from 4 to 5 per cent last week, while time money was in very light demand at 5 per cent for all maturities. Commercial paper moved at 5¼ to 5½ per cent.

NEW SECTION OF S. A. E.

MILWAUKEE, Nov. 5—A southeast Wisconsin section of the Society of Automotive Engineers has been organized in Milwaukee through the efforts of George W. Smith of the Milwaukee Division, Nash Motors Co., and W. S. Nathan, Lafayette Motors Corp., Milwaukee.

A. F. Milbrath, chief engineer, Wisconsin Motor Manufacturing Co., was appointed chairman of a nominating committee to report at a second meeting when the organization will be perfected.

Fewer Casings Made and Inventory Drops

Shipments Decline in September, But Gain Is Noted in Those of Solid Tires

NEW YORK, Nov. 7—Smaller production of casings, inner tubes and solid tires in September is reported by the Rubber Association of America in its monthly compilation of statistics.

Inventories of casings, inner tubes and tires decreased, as did the shipments in casings and tubes. There was a slight increase in shipments of solid tires. The following table shows inventory, production and shipments for all of 1922 and for nine months of this year.

PNEUMATIC CASINGS

1922	No. Mfrs. Reporting	Inventory	Production	Shipments
January	66	4,174,216	2,055,134	1,596,806
February	66	4,691,329	2,084,308	1,562,365
March	63	5,183,286	2,645,790	2,073,963
April	65	5,464,336	2,401,187	2,086,651
May	65	5,523,095	2,721,503	2,639,273
June	64	5,042,147	2,838,890	3,133,260
July	63	4,834,106	2,476,636	2,695,095
August	63	4,629,392	2,905,209	3,029,823
September	64	4,612,037	2,504,744	2,502,106
October	64	4,682,958	2,674,662	2,588,770
November	62	4,964,976	2,733,134	2,379,708
December	59	4,599,208	2,656,942	2,934,079
1923				
January	62	4,695,916	3,127,270	2,994,297
February	60	5,224,387	3,217,987	2,588,639
March	58	5,670,601	3,865,726	3,332,637
April	56	6,088,272	3,539,326	2,976,160
May	57	6,906,594	3,659,986	2,757,764
June	55	7,040,600	2,956,943	2,502,185
July	54	6,471,124	1,992,989	2,539,425
August	58	6,058,387	2,355,915	2,807,432
September	60	5,397,557	2,029,581	2,623,775

INNER TUBES

1922	No. Mfrs. Reporting	Inventory	Production	Shipments
January	66	5,246,647	2,343,393	1,889,724
February	65	6,141,956	2,596,774	1,702,583
March	63	6,991,118	3,017,511	2,090,737
April	65	7,230,096	2,650,573	2,329,343
May	65	7,189,552	2,970,696	2,938,947
June	64	6,186,534	3,130,629	3,973,679
July	63	5,675,839	3,068,199	3,630,744
August	63	5,207,228	3,808,224	4,220,055
September	64	5,164,757	3,501,442	3,558,971
October	64	5,488,033	3,787,758	3,420,680
November	61	6,210,053	3,850,908	3,075,023
December	59	5,732,125	3,411,074	3,825,949
1923				
January	62	5,838,310	3,951,885	3,748,651
February	60	6,771,958	4,039,202	3,001,697
March	57	7,740,945	4,875,414	3,828,315
April	55	8,394,184	4,259,558	3,535,635
May	57	9,292,223	4,317,537	3,414,115
June	54	8,924,326	3,590,011	3,581,060
July	52	7,527,281	2,666,354	3,942,247
August	53	6,950,578	3,577,922	4,304,034
September	55	6,457,455	3,254,575	3,683,574

SOLID TIRES

1922	No. Mfrs. Reporting	Inventory	Production	Shipments
January	11	181,769	40,224	33,294
February	11	183,448	39,492	36,805
March	11	182,197	49,433	48,350
April	11	173,748	46,664	52,309
May	11	170,904	57,640	60,711
June	11	169,808	66,089	63,408
July	11	176,375	71,505	60,425
August	11	189,698	84,313	69,435
September	11	200,016	82,767	66,797
October	11	213,942	85,480	71,275
November	11	234,684	85,775	61,466
December	10	244,061	77,221	64,570
1923				
January	11	262,462	83,343	60,611
February	11	270,191	75,457	63,394
March	11	265,843	79,788	77,144
April	10	260,631	71,468	72,609
May	10	268,323	77,288	67,147
June	10	283,425	72,445	52,126
July	10	263,891	42,345	45,219
August	10	262,810	48,141	45,925
September	10	249,379	37,074	45,971

"Production" and "Shipment" figures cover the entire month for which each report is made. "Inventory" is reported as of the last day of each month.

"Inventory" includes tires and tubes constituting domestic stock in factory and in transit to, or at, warehouses, branches (if any), or in possession of dealers on consignment basis, and as a total represents all tires and tubes still owned by manufacturers as a domestic stock.

"Shipment" includes only stock forwarded to a purchaser and does not include stock forwarded to a warehouse, branch, or on a consignment basis, or abroad.

INDUSTRIAL NOTES

Dearborn Equipment Co., maker of automotive tools and equipment, Kalamazoo, Mich., announces it has purchased the business of the Service Station Equipment Co. of Chicago. It will continue the sale of the greater portion of the items manufactured by the Chicago concern, incorporating them in the Dearborn line.

Fedders Manufacturing Co. of Buffalo, maker of automotive radiators, has moved its general offices into a recently completed new administration building, which will give over to factory use the space formerly occupied by the offices.

Miller Wagon Co., Calmar, Iowa, maker of truck bodies, cabs and buses, has opened a factory branch in St. Paul, following the decision of the Ford Motor Co. to establish an assembling plant in that city.

Kearns-Dughie Motors Co., Danville, Pa., soon will be moved to Lewistown, where the concern has acquired the plant and assets of the Belmont Motors Corp.

Mitchell Specialty Co., Inc., manufacturer of automobile body hardware, has removed its offices to its new factory at Coral and Buckius Streets, Philadelphia.

Trexler Co. of America has moved its sales and general office to the factory at Church and F Streets, Wilmington, Del.

Mark of 266.68 m.p.h. Set by Curtiss Plane

NEW YORK, Nov. 5—As a result of speed trials held over a three kilometer course at Mitchel Field, Mineola, L. I., covered four times, a new world's record of 266.68 m.p.h. has been established by Lieutenant A. J. Williams, winner of the Pulitzer trophy this year. Williams, an officer in the Naval Air Service, flew a Navy-Curtiss pursuit plane.

The new mark was set after a speed duel of two days duration between Williams and Lieutenant Harold J. Brow, a fellow officer, who did 259.15 m.p.h. Friday, after Williams had done 258.61. The two Navy flyers resumed the trials Sunday, Brow doing 265.6 m.p.h. after Williams had set up 263.3 m.p.h. In the next attempt, however, Williams reached 268.68 m.p.h.

STEVENS-DURYEA TURNED OVER

SPRINGFIELD, MASS., Nov. 5—Receivers of Stevens-Duryea, Inc., have turned over the plant and other assets of the company to R. M. Owen, who heads the syndicate which recently purchased the company. It is Owen's intention to continue the manufacture of Stevens-Duryea cars at the rate of about 200 a year, which is the production achieved under the receivership.

METAL MARKETS

Announcement by the sheet-rolling subsidiary of the leading producer that present prices would apply to contracts for the first quarter of 1924, and the opening of its order books for that delivery period serve to emphasize the general expectation that prevailing market conditions will undergo little alteration over the last two months of the current and the first month of next year. So far this event has been without effect on the market as a whole, there still being sellers of black sheets at $2 a ton below the Corporation's quotation, but it is pointed out that this concession would not apply to any but orders accompanied by specifications for immediate shipment.

This contention may or may not be true. So far the smaller independents have had no 1924 business offered, and whether they would accept it at the $2 concession or not remains to be seen. The leading interest always has a certain amount of business coming in from regular customers whenever it opens its books for a deferred delivery period, but this does not hold true of most of the other producers. In fact the real reason for the opening of its first quarter 1924 books by the American Sheet & Tin Plate Co. more than three weeks earlier than in November 1922 was the desire to expedite the placing of orders for tin plate. As it has always been customary to accept bookings for sheets and tin plate simultaneously, it was not deemed desirable to alter this practice, but had it not been for the tin plate situation, it is quite probable that there would have been no such haste to announce early 1924 sheet prices.

It is of interest to note that by Dec. 1, 1922, the Corporation had sold half of its first quarter sheet production, a condition that is not very likely to be duplicated this year. Full-finished automobile sheets continue steady at the unchanged price of 5.35 cents, and about the only effect of the chief interest's adherence to this price level for first quarter, 1924, deliveries is to preclude the possibility of an early premium market in that commodity, even though the demand should climb.

Steel buyers other than the automotive industries appear to look for declines as the result of lower pig iron, scrap, and coke prices. Such expectations have often led to keen disappointment, because a sudden buying flurry, limited in tonnage extent as it may be, usually outweighs what influence low raw material costs may have on steel prices.

Pig Iron.—With foundry iron obtainable even in drug store quantities at $22.50, melters are not keen about buying. A report recently made the rounds of the trade that a large consumer had changed his mind about placing an order for 20,000 to 30,000 tons of foundry iron after having canvassed the market. This buyer, however, had merely inquired what such a tonnage could be obtained for, and the quotations obtained apparently were not sufficiently inviting to make the investment alluring.

Aluminum.—Automotive consumers have concluded arrangements for modest tonnages for early 1924 delivery. The sole domestic producer's activities denote that a heavier consumption is anticipated in 1924 and preparations to satisfy this demand are in evidence at the various plants and subsidiaries. Importers also have booked some business for December and January shipment. Quotations are unaltered.

Copper.—Demand for finished copper and brass products continues light, copper wire being the best seller. The ingot metal market is still unsettled.

Calendar

SHOWS

Nov. 11-17—New York, Annual Automobile Salon, Hotel Commodore.

Nov. 12-17 — Chicago, Annual Business Exhibit and Convention of the Automotive Equipment Association, Coliseum.

Jan. 5-12 New York, Annual Automobile Show, under the auspices of the National Automobile Chamber of Commerce, Eighth Coast Artillery Armory.

Jan. 26-Feb. 2—Chicago, Annual Automobile Show, under the auspices of the National Automobile Chamber of Commerce, Coliseum and First Regiment Armory.

Jan. 26-Feb. 2—Chicago, Annual Automobile Salon, Hotel Drake.

Feb. 4-9—Chicago, Tenth Annual National Motorcycle, Bicycle and Accessory Show, Broadway Armory, under the auspices of the Motorcycle and Allied Trades Association, A. B. Coffman, secretary.

FOREIGN SHOWS

Nov. 9-18—Buenos Aires, Annual Automobile Exposition, under the direction of the Automovil Club Argentino.

Nov. 22-Dec. 1—London, Motor Transport Exhibition.

Dec. 1-10 — Montevideo, Uruguay, Automobile Show, Buildings of the Rural Society.

Dec. 8-19—Brussels, Passenger Cars, Trucks, Airplanes and Motor Boats, Aviation Palace.

RACES

Nov. 29.—Los Angeles.

CONVENTIONS

Nov. 16-17—Washington, D. C., First Annual Meeting of the National Motorists' Association.

Nov. 20-21—Dayton, Ohio, Factory Service Managers' Meeting of the National Automobile Chamber of Commerce in cooperation with the Society of Automotive Engineers.

Nov. 21—Detroit, Annual Meeting of Motor Truck Industries, Detroit Athletic Club.

Jan. 5—New York City, Annual Meeting, Automotive Electric Association.

Jan. 24-31 — Chicago, Annual Convention and Show of the American Road Builders' Association, the former to be held in the Congress and the latter in the Coliseum.

May, 1924—Detroit, International Motor Transport Congress under the auspices of the National Automobile Chamber of Commerce.

S. A. E. MEETINGS

Nov. 15—Detroit Section, Gears — Is it Necessary to Grind? Round Table discussion, General Motors Building, Detroit, 8 p.m.

Nov. 15—Metropolitan Section, Commercial Air Travel, E. P. Warner, Automobile Club of America, 247 West Fifty-fourth Street, New York City, 8 p.m., Dinner, 6.30 p.m.

Nov. 19—Cleveland Section, Engineering Aspect of the Used Car, David Beecroft, Cleveland Hotel, Cleveland, 7.30 p.m., Dinner, 6.30 p.m.

Dec. 13—Metropolitan Section, Vehicles for Package Delivery.

Jan. 22-25—Annual Meeting of the S. A. E.—Detroit.

Feb. 14 — Metropolitan Section, Vehicle Depreciation.

March 13—Metropolitan Section, Replacement Parts and Accessories.

April 17—Metropolitan Section, Fleet Maintenance, F. W. Winchester.

May 15 — Metropolitan Section, What Roads and Steels Do to Automobiles.

First Show Staged by São Paulo Trade

SÃO PAULO, Brazil, Oct. 21 (by Mail) —For the first time in the history of the motor car industry in the State of São Paulo, automobile dealers in the City of São Paulo united and staged an automobile, parts and accessory show in the new Industrial Building, one of the finest of its kind in South America. While the exposition was the initial venture of the dealers, it brought such credit to them that it will be carried on next year on a more elaborate scale.

During the progress of the show the Good Roads Association of the State held its convention, attended by the Secretary of War for the Government of Brazil.

In addition to the automobile exhibits there were displays of road building equipment including the Best tractor and the Russel road scraper, Fordson tractor and Martin scraper and also the large J. I. Case machines. These were shown in front of the Industrial Building where demonstrations of their uses were given daily.

Building in Three Sections

The building was divided into three sections. Opening from the main entrance was Salon A. In the center of this room were located the F. I. A. T. exhibited by F. Matarazzo & Cia. Adjoining, also in the center, were the Durant and Star and the new model Rugby.. These were shown by O. Salles Penteado. The Star drew a great deal of attention. The Packard, Nash and Renault were displayed by Auto Geral; Hupmobile by Joao Jorge, Figuerredo & Cia. and Grassi Irmaos showed the Lancia. Motorcycles and supplies were shown in this room by Irmaos Caloi.

The development of the radiator industry in São Paulo was shown by Ribeiro & Cia., while Goodyear and U. S. Rubber displayed tires; Anglo-Mexican Petroleum Co. exhibited a large Bowser sidewalk pump, greases and oil, and E. M. Grau & Cia. and Godinho Cerqueira & Cia. supplies.

Salon B, opening on the right of the entrance, was attractively decorated. The place of honor, or Booth No. 1, contained the stand of Costa, Campos & Malta, who showed the new H. C. S. Six. Opposite was the booth of Tobiao Barros & Co. showing the Lincoln and Ford, and next to that the booth of Siqueira Campos & Cia. with the Columbia. Booth No. 6 contained the exhibit of Dias Carneiro & Cia., distributor of the Overland, and in this booth was shown a Willys-Knight engine.

The largest display in Salon B was that of the Studebaker Corp. with six models. Standard Oil products and Dunlop tires were also shown in this section.

New Buick Shown

In Salon C a great deal of interest was shown in the exhibit of Byington & Cia. of the new model Buick, together with the Cadillac and Chevrolet.

At the lower end of Salon C Soc. Ind. e de Automoveis "Bom Retiro" displayed two models, one each of Hudson and Essex, and adjoining was the Vauxhall in the booth of Nelson Bechara & Cia.

Irmaos Gettai showed the Alpha-Romeo, a new car in São Paulo, and Auto Ideal the Jordan, and next to this display was the Premier, shown by Mayer & Cia.

Antunes dos Santos & Cia. had a well appointed booth where they exhibited the new model of the Dodge which aroused much favorable comment, and the Paige. Batteries were displayed by B. F. Millbach.

In the large patio in the rear of the building, under the galleries, Ford displayed the Fordson tractor with the Martin road scraper attached and the W. & K. trailer. At the farther end of this patio Ford also showed a chassis owned by the General Electric Co.

The various booths were decorated with the colors of the nations represented by the cars shown.

Southeast Farmers Buying Equipment

ATLANTA, GA., Nov. 5—A substantial increase in tractor and power farming equipment sales during September as compared with the same months last year, and as compared with August sales, is shown in the monthly report of the Federal Reserve Bank of Atlanta covering conditions in the southeastern states.

A compilation of detailed reports from the seven larger implement and tractor distributors of the district shows an increase of 25.8 per cent in gross sales in September as compared with August, and an increase of 22.1 per cent as compared with the same month last year.

The month proved one of the best of the year, and cotton having now climbed to slightly above 30 cents per pound, tractor and implement distributors are virtually certain of continued steady demand through the rest of the year, and well into the spring of 1924.

It is certain, too, that if October sales hold to the same level as September, 1923 will prove the best year the industry has ever experienced in this section in gross sales volume. There has been a marked increase in industrial tractor sales the past two months.

ASK SPEEDWAY RECEIVER

KANSAS CITY, Nov. 5—Three creditors, with claims aggregating $500,000, have caused the filing of a voluntary petition in bankruptcy against the Kansas City Speedway Association, owner of the mile and a quarter track here. Insolvency is charged and a receiver is sought. It is said that the filing of the petition was the result of a plan to reorganize the company.

VICTOR SALES CAMPAIGN

SPRINGFIELD, OHIO, Nov. 5—A nation-wide sales campaign has been inaugurated by the Victor Rubber Co.